Precalculus Mathematics for Calculus International Metric Edition 8th edition Stewart Test Bank

SKU: 9798214031811-TEST-BANK

2.1 Functions

1. Express the following rule in function notation:

"subtract 2, then divide by 9"

a. $f(x) = \dfrac{x - 2}{9}$

b. $f(x) = x - \dfrac{2}{9}$

c. $f(x) = \dfrac{x - 9}{2}$

d. $f(x) = x - 2 \div 9$

e. $f(x) = \dfrac{x}{9} - 2$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.02m
DATE CREATED: 6/11/2014 8:13 AM
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2. Express the following rule in function notation:

"square, add 3, then take the square root"

a. $f(x) = \sqrt{x^2 + 3}$

b. $f(x) = \sqrt{\sqrt{x} + 3}$

c. $f(x) = \left(\sqrt{x} + 3\right)^2$

d. $f(x) = \sqrt{(x + 4)^2}$

e. $f(x) = \left(\sqrt{x} + \sqrt{3}\right)^2$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.04m
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3. Evaluate the function $f(x) = x^2 + 5x$ at $f(9)$.

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a. $f(9) = 54$
b. $f(9) = 126$
c. $f(9) = 405$
d. $f(9) = 19$
e. $f(9) = 90$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.14m
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4. Evaluate the function $f(x) = 9x + 3$ at $f(-17)$.

a. $f(-17) = -150$
b. $f(-17) = -42$
c. $f(-17) = -151$
d. $f(-17) = 12$
e. $f(-17) = -156$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.13m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:30 AM

5. Evaluate the function $f(x) = \dfrac{44 - x}{16 + x}$ at $f(4)$.

a. $f(4) = 2$
b. $f(4) = 2.1$
c. $f(4) = 2.05$
d. $f(4) = 2.15$
e. $f(4) = 2.2$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.15m

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2.1 Functions

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6. Evaluate the function $f(x) = 8x^2 + 9x - 3$ at $f(9)$.

a. $f(9) = 726$
b. $f(9) = 724$
c. $f(9) = 732$
d. $f(9) = 729$
e. $f(9) = 733$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.17m
DATE CREATED: 6/11/2014 8:13 AM
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7. Evaluate the function $f(x) = 3|x - 1|$ at $f(9)$.

a. $f(9) = 18$
b. $f(9) = 22$
c. $f(9) = 19$
d. $f(9) = 24$
e. $f(9) = 27$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.19m
DATE CREATED: 6/11/2014 8:13 AM
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8. Evaluate the following piecewise defined function at $f(8), f(-1)$ and $f(6)$.

$$f(x) = \begin{cases} x^2 + 6x & \text{if } x \le 6 \\ 2x & \text{if } x > 6 \end{cases}$$

a. $f(8) = 16, f(-1) = -1, f(6) = 72$
b. $f(8) = 19, f(-1) = -1, f(6) = 78$
c. $f(8) = 16, f(-1) = -5, f(6) = 68$
d. $f(8) = 16, f(-1) = -5, f(6) = 72$
e. $f(8) = 19, f(-1) = -5, f(6) = 78$

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2.1 Functions

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.23m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/28/2014 3:36 AM

9. Evaluate the following piecewise defined function at $f(2), f(4)$, and $f(6)$.

$$f(x) = \begin{cases} 8 & \text{if } x < 4 \\ 3x - 6 & \text{if } x \geq 4 \end{cases}$$

a. $f(2) = 8, f(4) = 7, f(6) = 13$
b. $f(2) = 0, f(4) = 0, f(6) = 4$
c. $f(2) = 8, f(4) = 6, f(6) = 32$
d. $f(2) = 8, f(4) = 0, f(6) = 4$
e. $f(2) = 8, f(4) = 6, f(6) = 12$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.22m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:41 AM

10. For the function $f(x) = 4x^2 + 1$, find

$$\frac{f(a + h) - f(a)}{h}, h \neq 0.$$

a. $\frac{f(a + h) - f(a)}{h} = 4h + 4a$

b. $\frac{f(a + h) - f(a)}{h} = 4h + 8a$

c. $\frac{f(a + h) - f(a)}{h} = 8h + 4a$

d. $\frac{f(a + h) - f(a)}{h} = 4h + 16a$

e. $\frac{f(a + h) - f(a)}{h} = 12h + 8a$

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2.1 Functions

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.30m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:46 AM

11. For the function $f(x) = 3x^3$, find

$$\frac{f(a + h) - f(a)}{h}.$$

$$\frac{f(a + h) - f(a)}{h} = \#\#b2\#\#h + \#\#b3\#\#a$$

a. $\frac{f(a + h) - f(a)}{h} = 3a^3 + 9ah + 9h^2$

b. $\frac{f(a + h) - f(a)}{h} = 6a^3 + 9ah - 3h^2$

c. $\frac{f(a + h) - f(a)}{h} = 9a^2 + 3ah + 9h^2$

d. $\frac{f(a + h) - f(a)}{h} = 9a^2 + 9ah + 3h^2$

e. $\frac{f(a + h) - f(a)}{h} = 9a^2 - 9ah + 3h^2$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.34m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:51 AM

12. Find the domain of the following function:

$f(x) = 2x, -4 \le x \le 8$

a. $(-4, 8)$

b. $(-\infty, \infty)$

c. $[-4, 8]$

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d. $[-8, 16]$

e. $(-8, 16)$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.37m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:52 AM

13. Find the domain of the following function:

$$f(x) = \frac{2}{2x + 6}$$

a. $(-\infty, -3] \cup [-3, \infty)$

b. $(-\infty, -3) \cup (-3, \infty)$

c. $(-\infty, \infty)$

d. $(-\infty, -2] \cup [-2, \infty)$

e. $(-\infty, -2) \cup (-2, \infty)$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.40m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:56 AM

14. Find the domain of the following function:

$$f(x) = \frac{x + 13}{x^2 - 4}$$

a. $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$

b. $(-\infty, -13) \cup (-13, -2) \cup (-2, 2) \cup (2, \infty)$

c. $(-\infty, \infty)$

d. $(-\infty, 2] \cup [2, \infty)$

e. $(-\infty, 2) \cup (2, \infty)$

ANSWER: a
POINTS: 1

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2.1 Functions

QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.41m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:58 AM

15. Find the domain of the following function:

$f(x) = \sqrt[3]{x - 8}$

a. $[0, \infty)$
b. $(0, \infty)$
c. $[8, \infty)$
d. $(-\infty, 8]$
e. $(-\infty, \infty)$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.45m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:00 AM

16. Find the domain of the following function:

$f(x) = \dfrac{\sqrt{x}}{x^2 - 16x + 55}$

a. $(-\infty, \infty)$
b. $[0, 5) \cup (5, 11) \cup (11, \infty)$
c. $[5, 11]$
d. $(5, 11)$
e. $(-\infty, 5) \cup (5, 11) \cup (11, \infty)$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.50m
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2.1 Functions

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17. Find the domain of the following function:

$g(x) = \sqrt[6]{x^2 - 4x}$

a. $(-\infty, 0] \cup (16, \infty)$
b. $(-\infty, \infty)$
c. $(-\infty, 0] \cup [4, \infty)$
d. $(-\infty, 0] \cup [16, \infty)$
e. $(-\infty, 0) \cup (16, \infty)$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.51m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:08 AM

18. Express the following rule in function notation using the variable x and the function f:

"Divide by 10, then subtract 14"

[For example: the rule "Square, then subtract 5" is expressed as the function $f(x) = (x^2 - 5)$]

ANSWER: $f(x) = \frac{x}{10} - 14$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.02
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:09 AM

19. Express the following rule in function notation using the variable x and the function f:

"Square, add 19, then take the square root"

[For example: the rule "Square, then subtract 5" is expressed as the function $f(x) = (x^2 - 5)$]

ANSWER: $f(x) = \sqrt{x^2 + 19}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True

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2.1 Functions

STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.04
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20. Evaluate the following piecewise defined function at the values $f(-4), f(7)$, and $f(10)$.

$$f(x) = \begin{cases} x^2 + 4x & \text{if } x \leq 7 \\ 2x & \text{if } x > 7 \end{cases}$$

$f(-4) =$ _____

$f(7) =$ _____

$f(10) =$ _____

ANSWER: 0; 77; 20
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.23
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:13 AM

21. Use the function $f(x) = x^2 + 2$ to evaluate the following expressions and simplify:

$f(x + 7)$ and $f(x) + f(7)$

Enter two equations, separated by a comma, in the form $f(x + 7) = \ldots, f(x) + f(7) = \ldots$

ANSWER: $f(x + 7) = x^2 + 14x + 51, f(x) + f(7) = x^2 + 53$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.25
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:16 AM

22. For the function $f(x) = 2x^2 + 9$, find

$f(a + h)$ and $\dfrac{f(a + h) - f(a)}{h}$, where $h \neq 0$.

Give your answer as two expressions, separated by a comma.

ANSWER: $f(a + h) = 2h^2 + 2a^2 + 4ha + 9, \dfrac{f(a + h) - f(a)}{h} = 2h + 4a$
POINTS: 1

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2.1 Functions

QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.30
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DATE MODIFIED: 8/18/2014 4:19 AM

23. Find the domain of the following function:

$f(x) = 5x + 11, -7 \leq x \leq 4$

Express your answer using interval notation.
ANSWER: $[-7, 4]$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.37
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:19 AM

24. Find the domain of the following function:

$$f(x) = \frac{1}{5x - 15}$$

Express your answer using interval notation.
ANSWER: $(-\infty, 3) \cup (3, \infty)$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.40
DATE CREATED: 6/11/2014 8:13 AM
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25. Find the domain of the following function.

$$f(x) = \frac{x + 5}{x^2 - 9}$$

Express your answer using interval notation.
ANSWER: $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True

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2.1 Functions

STUDENT ENTRY MODE: Basic
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26. Find the domain of the following function:

$G(x) = \sqrt{49 - x^2}$

Express your answer using interval notation.
ANSWER: $[-7, 7]$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.48
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:24 AM

27. Find the domain of the following function:

$f(t) = \sqrt[3]{5t - 9}$

Express your answer using interval notation.
ANSWER: $(-\infty, \infty)$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.01.45
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:26 AM

28. Use the function $f(x) = x^2 + 2$ to evaluate the following expressions and simplify:

$f(x + 2)$ and $f(x) + f(2)$

a. $f(x) + f(2) = x^2 + 8$

b. $f(x + 2) = x^2 + 4x + 6$

c. $f(x) + f(2) = x^2 + 6$

d. $f(x) + f(2) = x^2 + 4$

e. $f(x + 2) = x^2 + 4x + 4$

ANSWER: a, b

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2.1 Functions

POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True
OTHER: srca.03.01.25m
DATE CREATED: 6/11/2014 8:13 AM
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29. Use the function $f(x) = 3x + 8$ to evaluate the following expressions:

$f(x^2)$ and $(f(x))^2$

a. $(f(x))^2 = 9x^2 + 48x + 64$

b. $f(x^2) = 9x^2 + 8$

c. $f(x^2) = 3x^2 + 8$

d. $f(x^2) = 3x^2 + 64$

e. $(f(x))^2 = 9x^2 + 24x + 64$

ANSWER: a, c
POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True
OTHER: srca.03.01.27m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:31 AM

30. Find the domain of the following function:

$G(x) = \sqrt{x^2 - 81}$

a. $(-\infty, -9)$

b. $(-\infty, 9]$

c. $[9, \infty)$

d. $[-9, 9]$

e. $(-\infty, -9]$

ANSWER: c, e
POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True
OTHER: srca.03.01.48m
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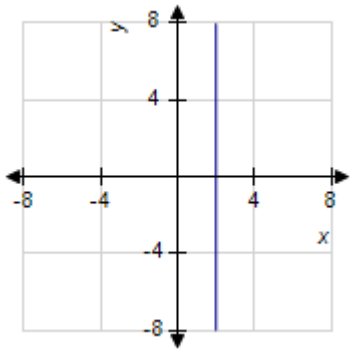
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2.2 Graphs of Functions

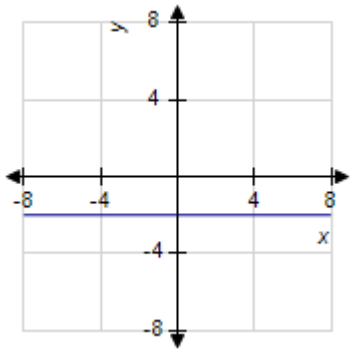
1. Select the correct graph of the function.

$f(x) = 2$

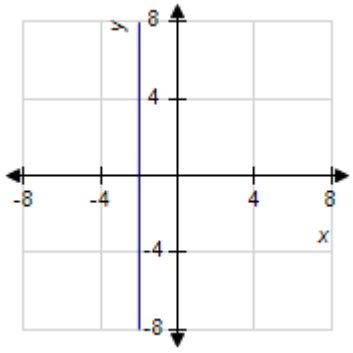
a.



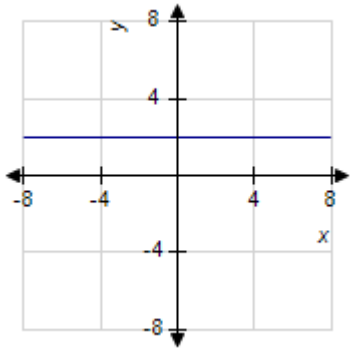
b.



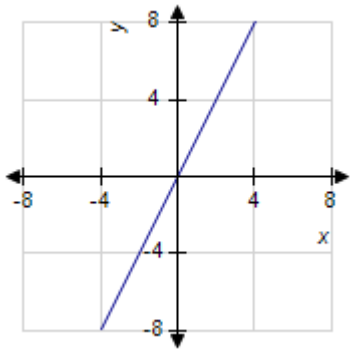
c.



d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.02m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:32 AM

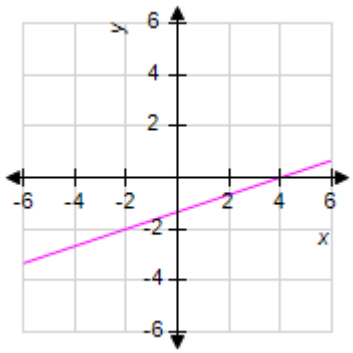
2. Select the correct graph and domain of the function.

$$f(x) = \frac{1}{3}(x+4)$$

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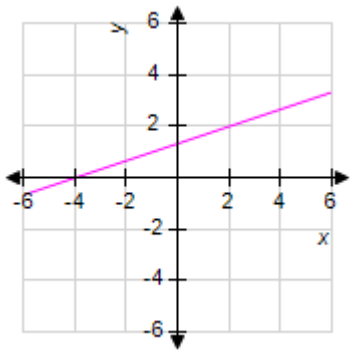
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a.



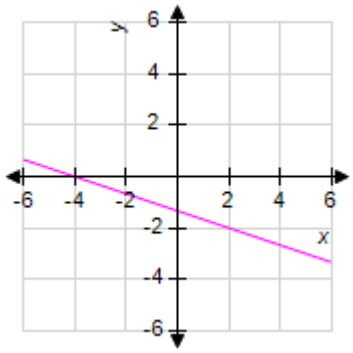
Domain: $(-\infty, \infty)$

b.



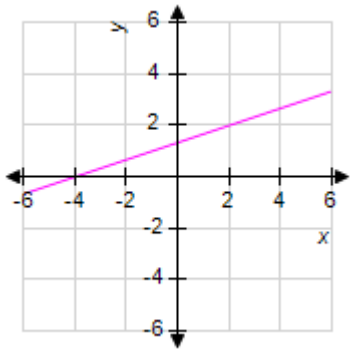
Domain: $(-3, \infty)$

c.



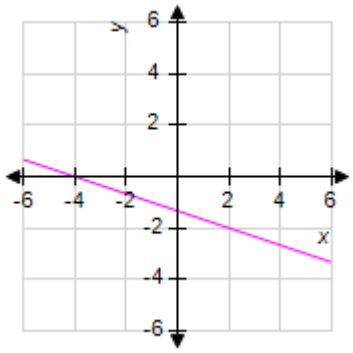
Domain: $(-3, \infty)$

d.



Domain: $(-\infty, \infty)$

e.



Domain: $(-\infty, \infty)$

ANSWER:	d
POINTS:	1
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
OTHER:	srca.03.02.28m
DATE CREATED:	6/11/2014 8:13 AM
DATE MODIFIED:	8/18/2014 3:47 AM

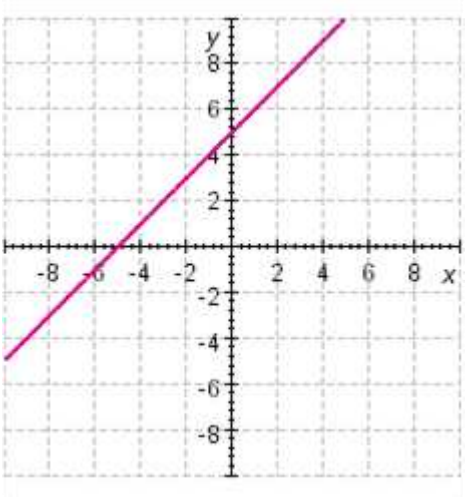
3. Sketch the graph of the function by first making a table of values.

$f(x) = x + 5, -3 \le x \le 3$

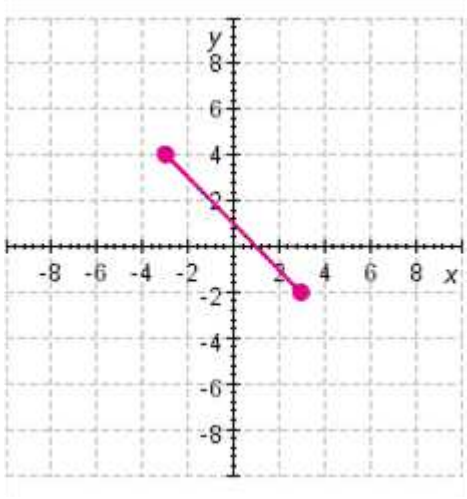
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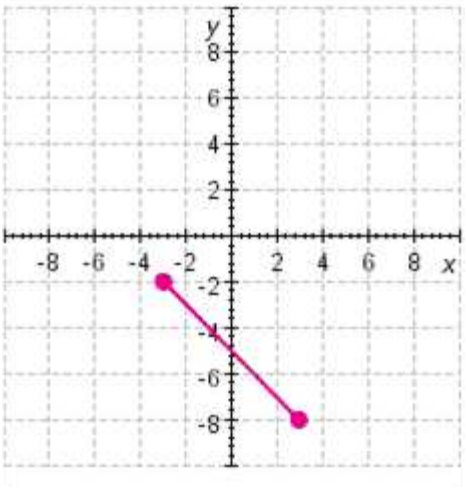
a.



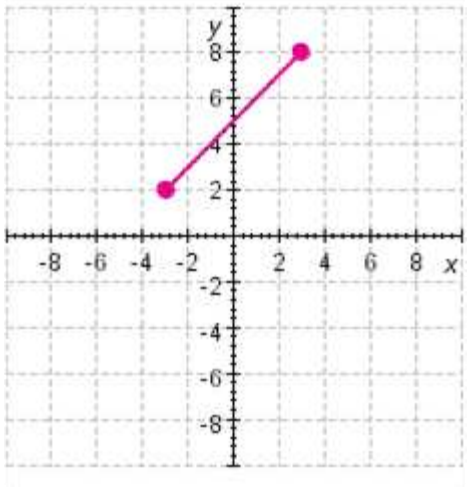
b.



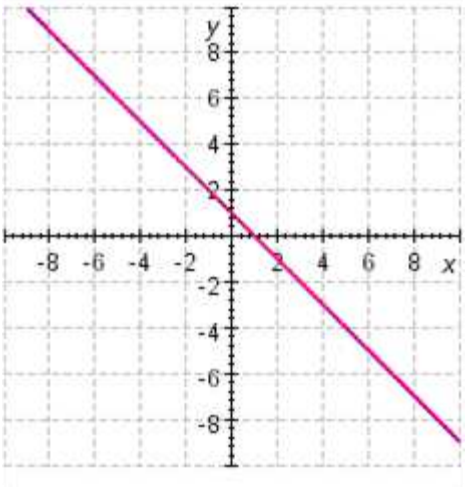
c.



d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 5:47 AM

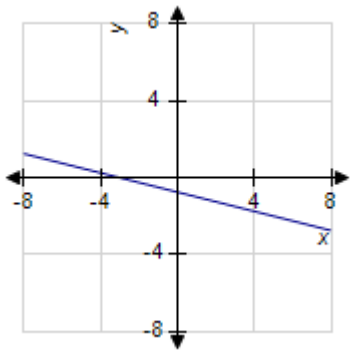
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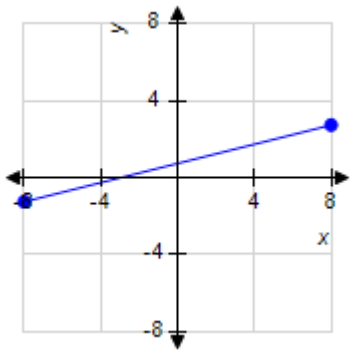
4. Select the correct graph of the function.

$f(x) = \dfrac{x+3}{4}, \quad -4 \le x \le 4$

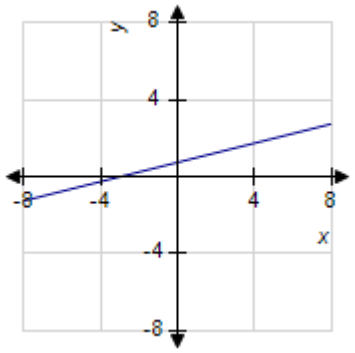
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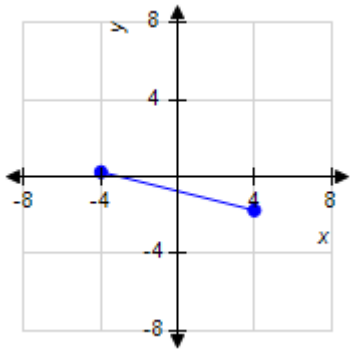
b.



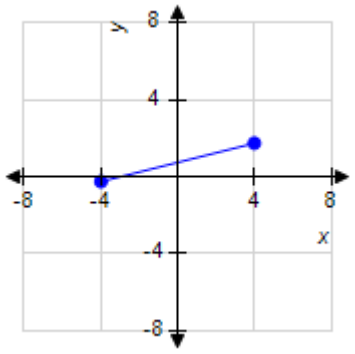
c.



d.



e.



ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 3:58 AM

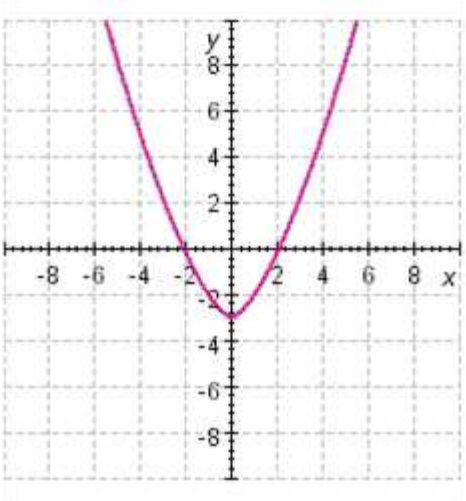
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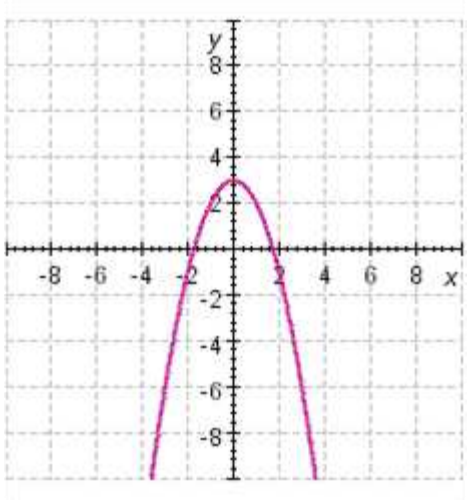
5. Sketch the graph of the function by first making a table of values.

$f(x) = x^2 - 3$

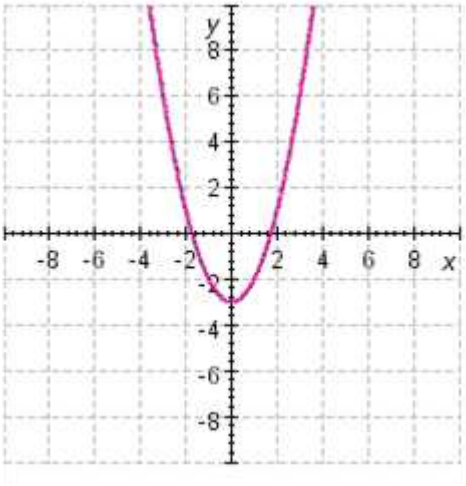
a.



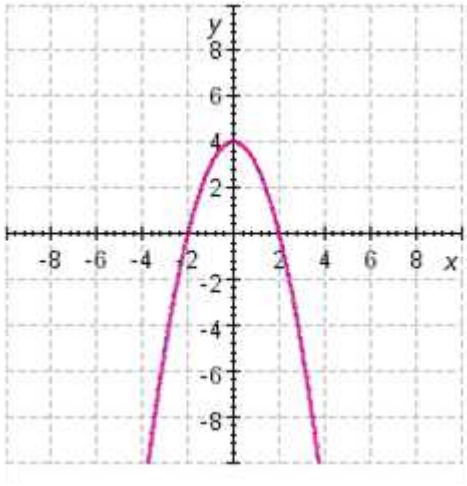
b.



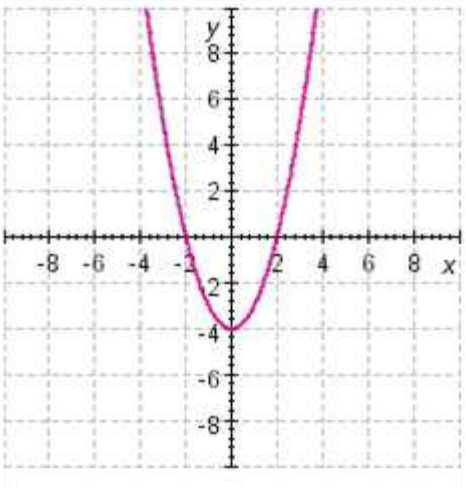
c.



d.



e.



ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False

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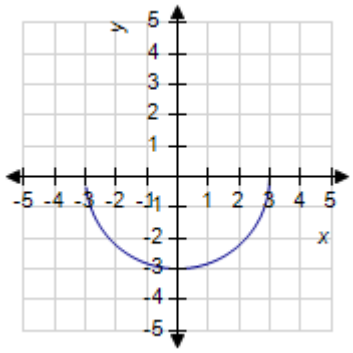
2.2 Graphs of Functions

STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 6:26 AM

6. Select the correct graph and domain of the function.

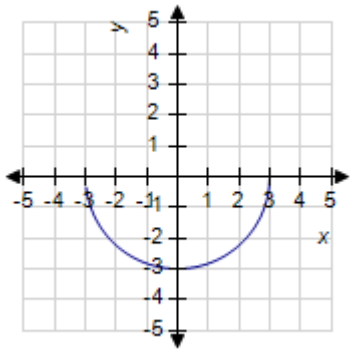
$f(x) = -\sqrt{(9-x^2)}$

a.



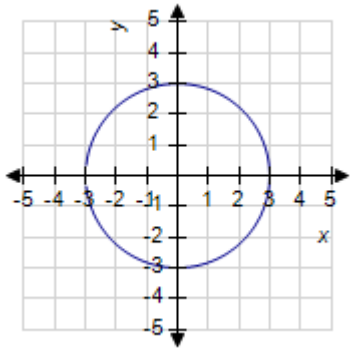
Domain: [–3, 0]

b.



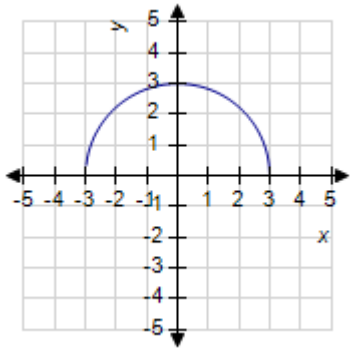
Domain: [–3, 3]

c.



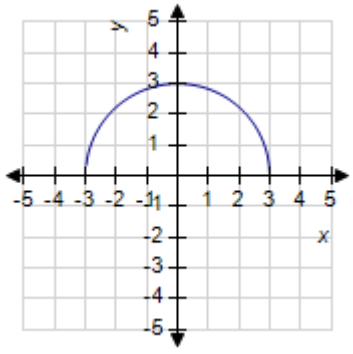
Domain: [–3, 3]

d.



Domain: [–3, 3]

e.



Domain: [–3, 0]

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic

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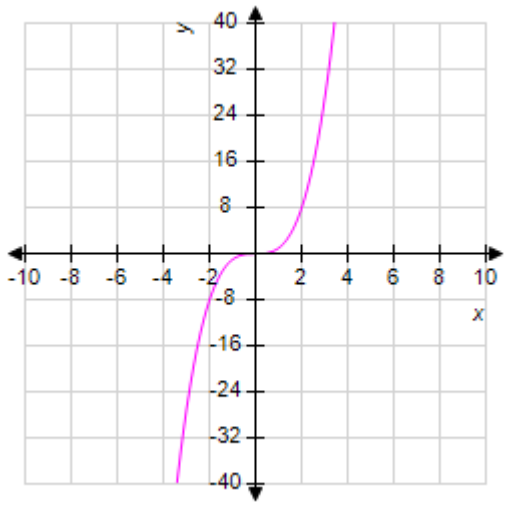
2.2 Graphs of Functions

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DATE MODIFIED: 8/18/2014 4:04 AM

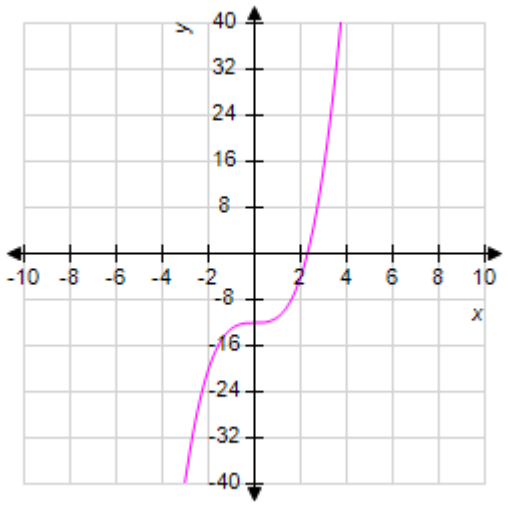
7. Sketch the graph of the function by first making a table of values.

$g(x) = x^3 - 12$

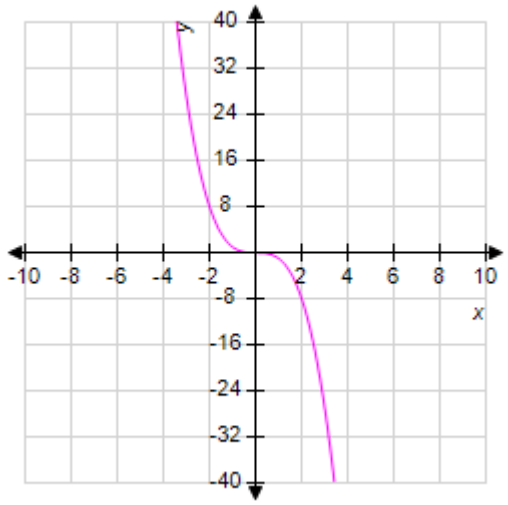
a.



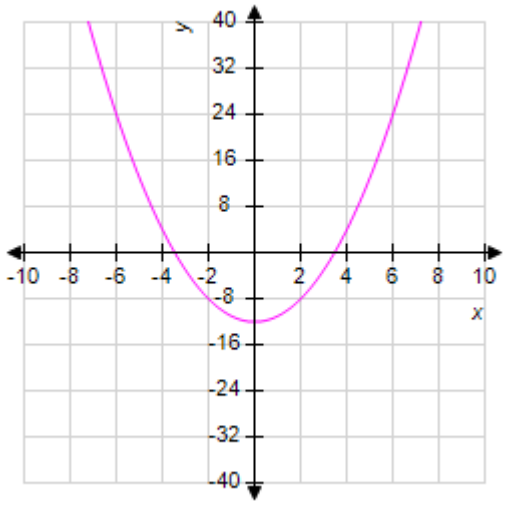
b.



c.



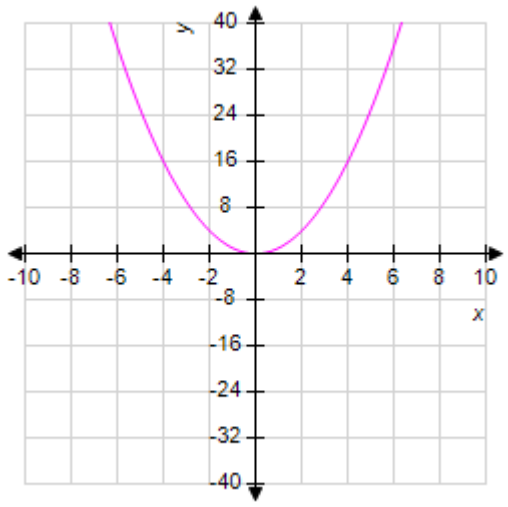
d.



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e.

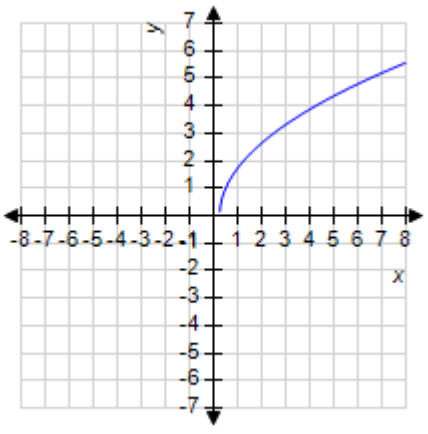


ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 4:05 AM

8. Select the correct graph and domain of the function.

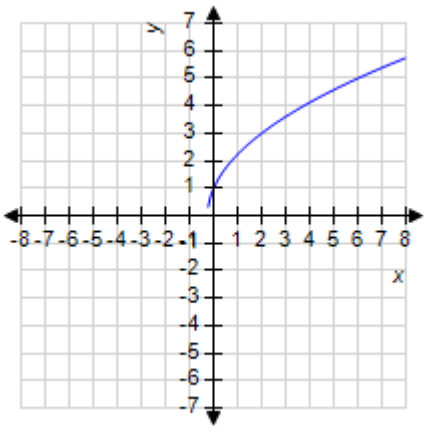
$f(x) = \sqrt{4x + 1}$

a.



Domain: $[\frac{1}{4}, \infty)$

b.

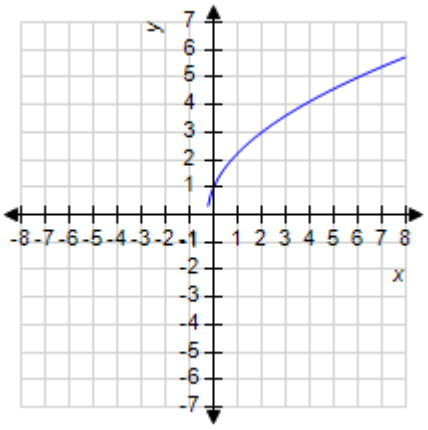


Domain: $[0, \infty)$

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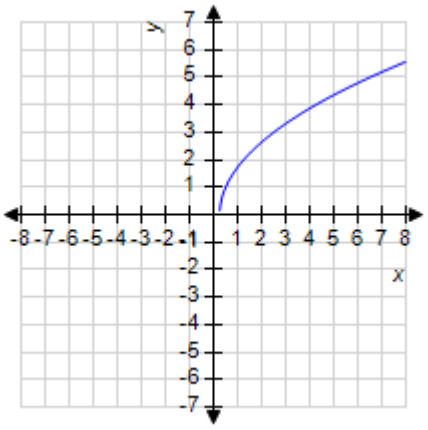
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c.



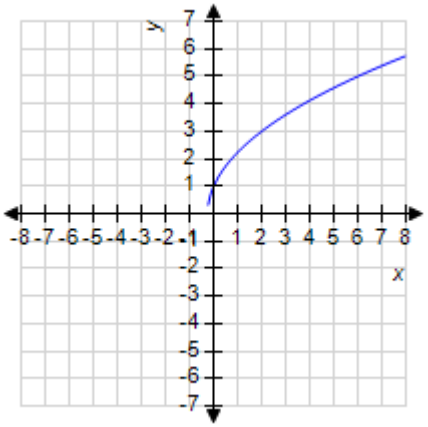
Domain: $[-\frac{1}{4}, 6)$

d.



Domain: $[0, \infty)$

e.



Domain: $[-\frac{1}{4}, \infty)$

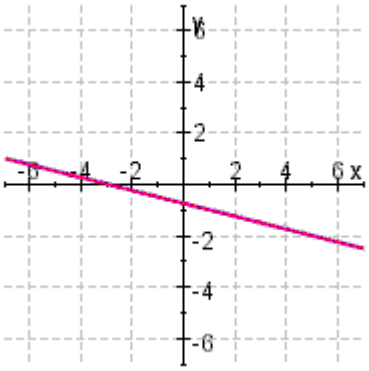
ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.36m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:09 AM

9. Sketch the correct graph and domain of the function $f(x) = \frac{1}{4}(x+3)$.

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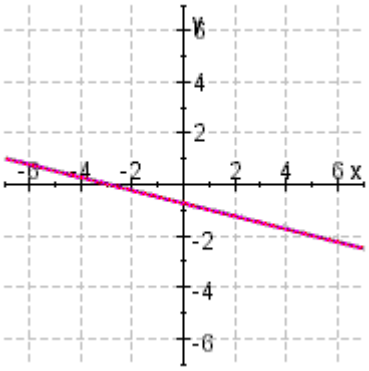
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a.



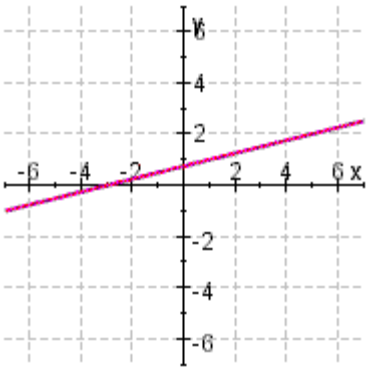
Domain: (–∞, ∞)

b.



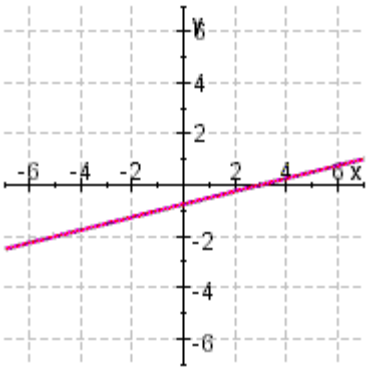
Domain: (–4, ∞)

c.



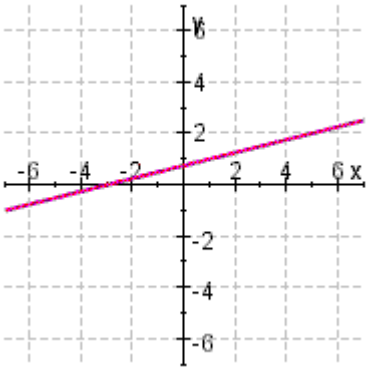
Domain: (–∞, ∞)

d.



Domain: (–∞, ∞)

e.



Domain:(–4, ∞)

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 7/25/2014 6:42 AM

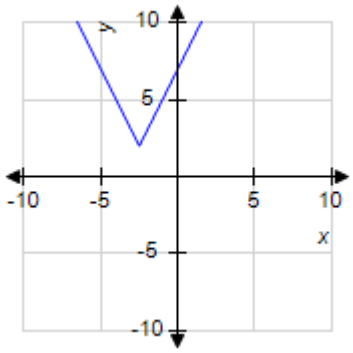
10. Select the correct graph of the function.

$F(x) = |2x + 5|$

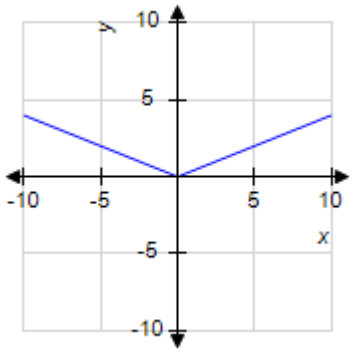
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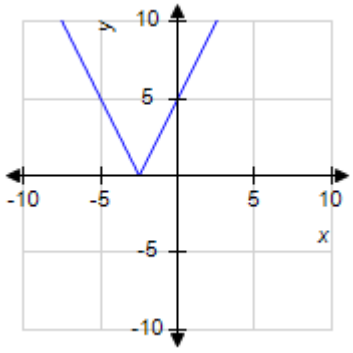
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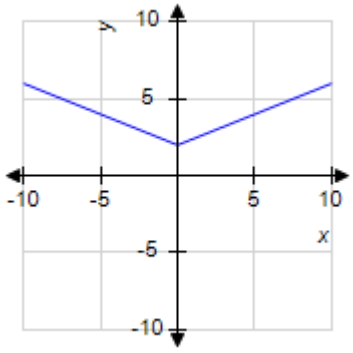
b.



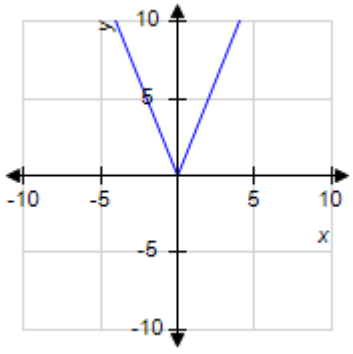
c.



d.



e.



ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.19m
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DATE MODIFIED: 8/18/2014 4:13 AM

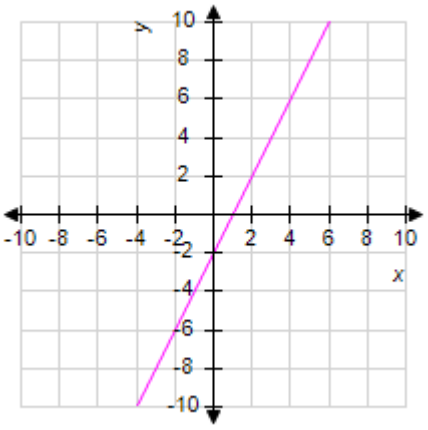
11. Sketch the graph of the function by first making a table of values.

$f(x) = |2x - 2|$

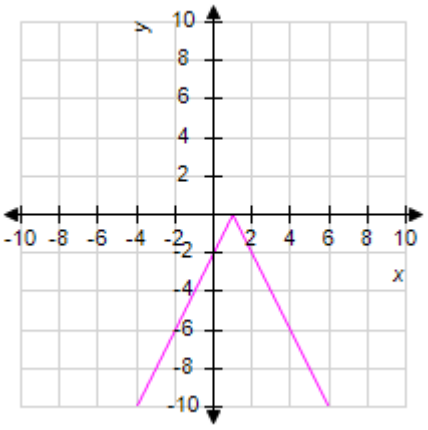
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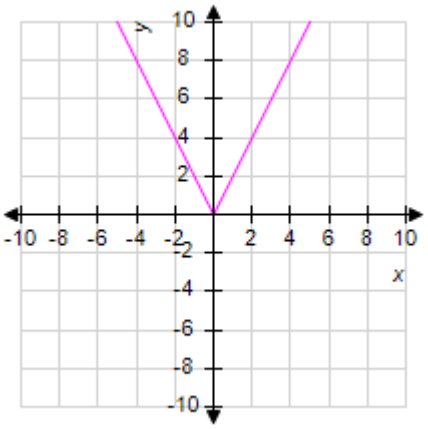
a.



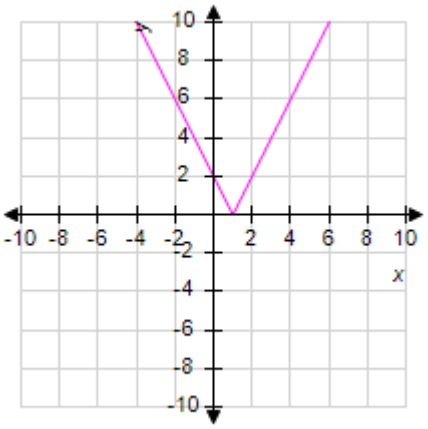
b.



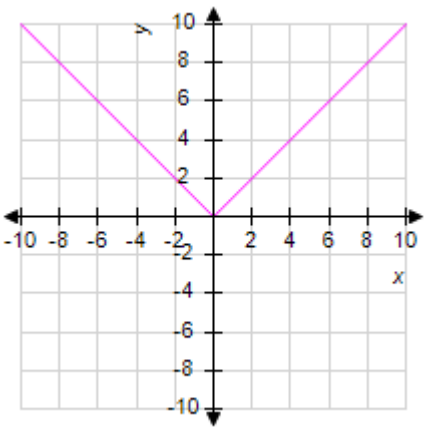
c.



d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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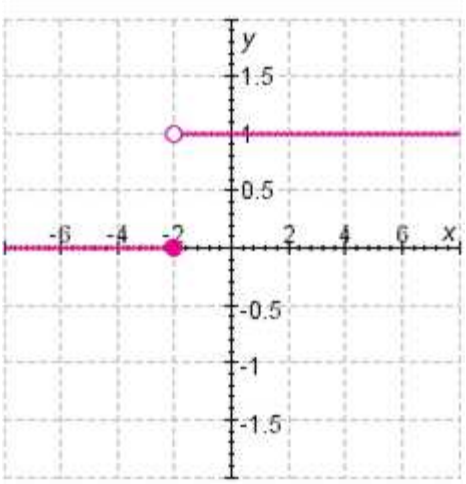
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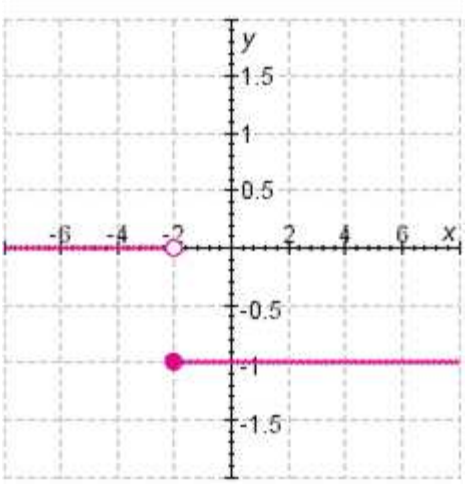
12. Sketch the graph of the piecewise defined function.

$$f(x) = \begin{cases} 0 \text{ if } x < -2 \\ 1 \text{ if } x \geq -2 \end{cases}$$

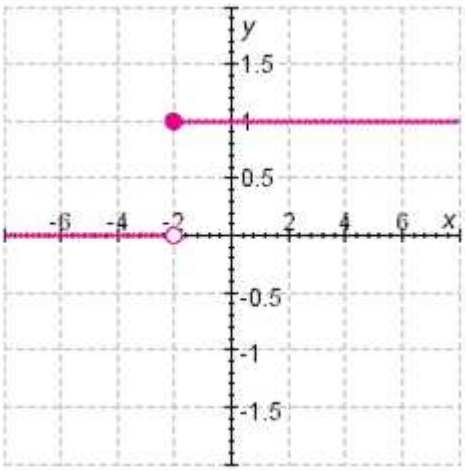
a.



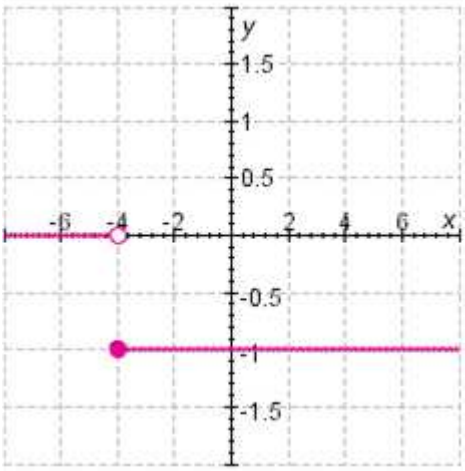
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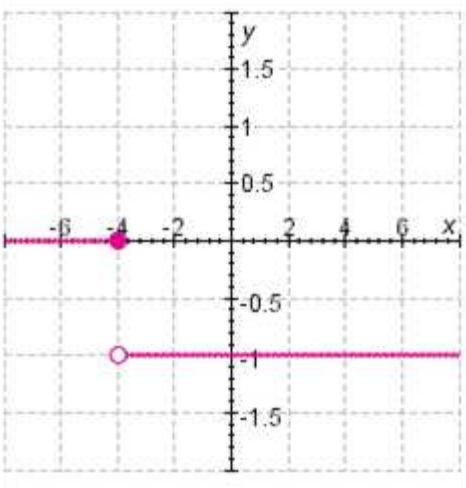
c.



d.



e.



ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)

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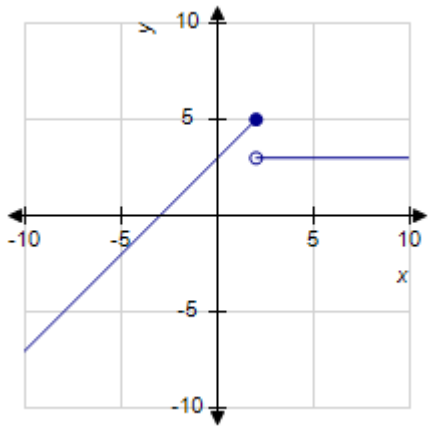
2.2 Graphs of Functions

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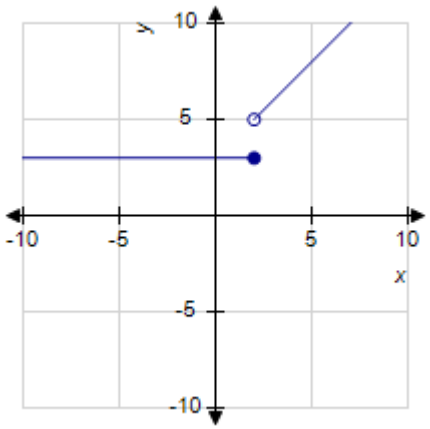
13. Select the correct graph of the function.

$$f(x)=\begin{cases}3 \text{ if } x \le 2\\ x+3 \text{ if } x>2\end{cases}$$

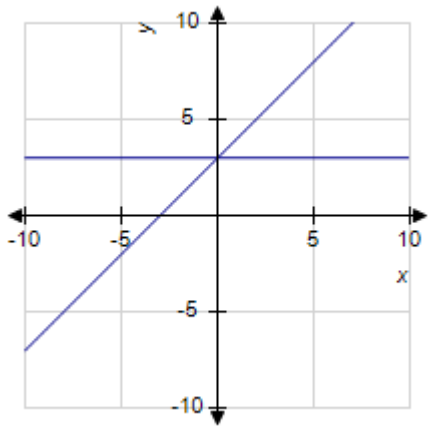
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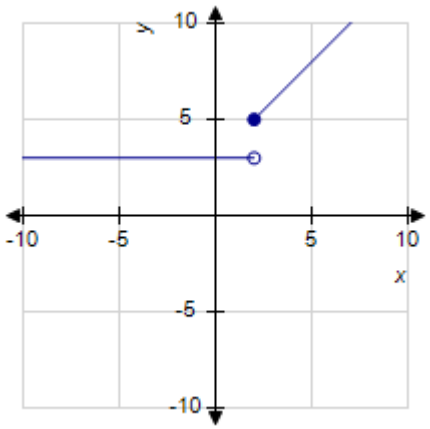
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c.



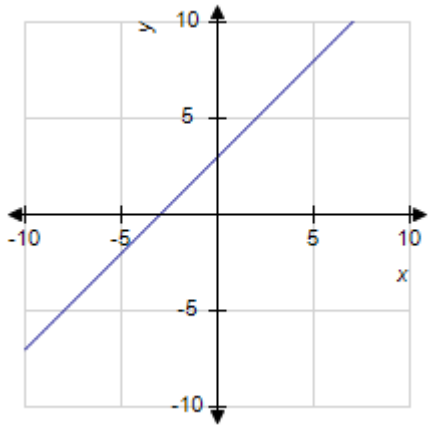
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e.

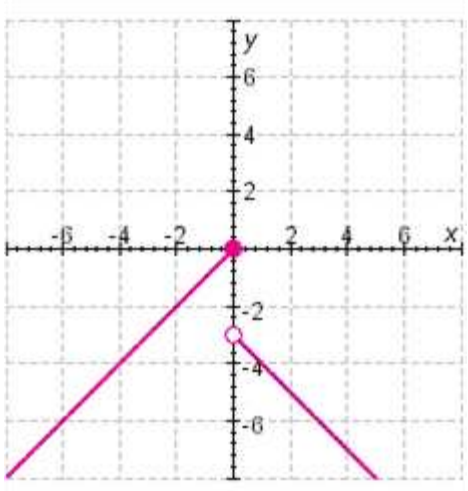


ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
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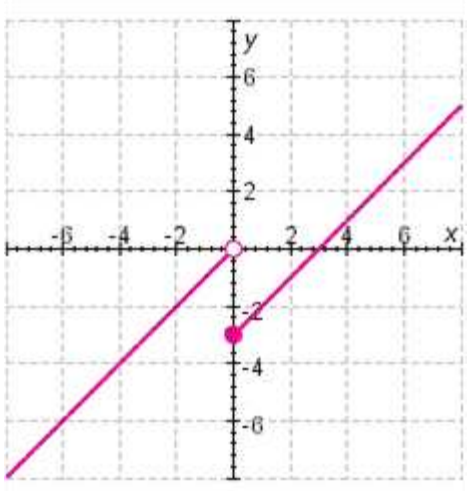
14. Sketch the graph of the piecewise defined function.

$$f(x)=\begin{cases} x & \text{if } x \le 0 \\ x-3 & \text{if } x > 0 \end{cases}$$

a.



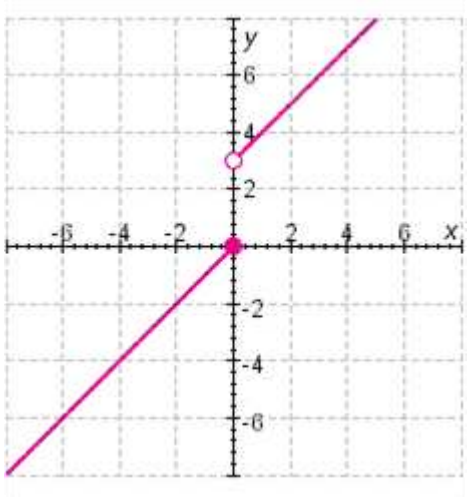
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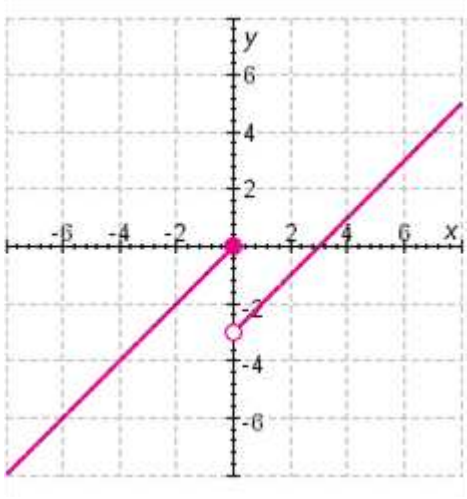
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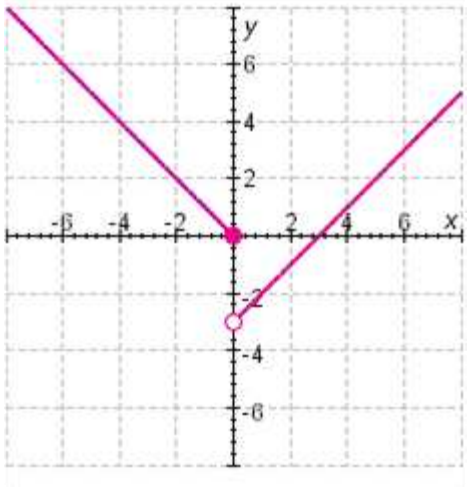
c.



d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
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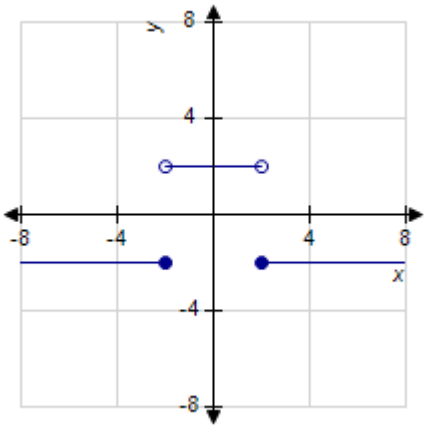
15. Select the correct graph of the function.

$$f(x)=\begin{cases} -2 \text{ if } x<-2 \\ 2 \text{ if } -2\le x\le 2 \\ -2 \text{ if } x>2 \end{cases}$$

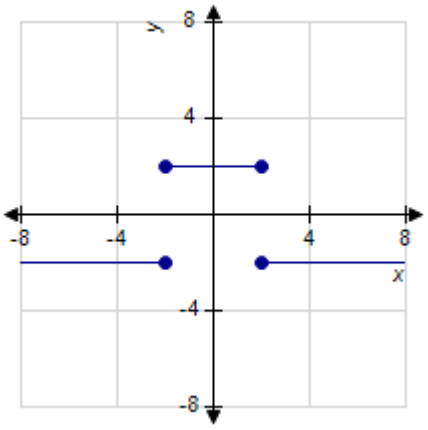
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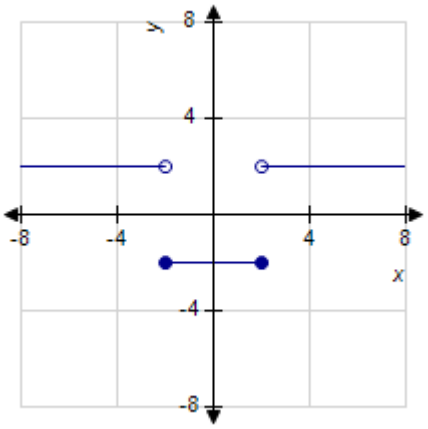
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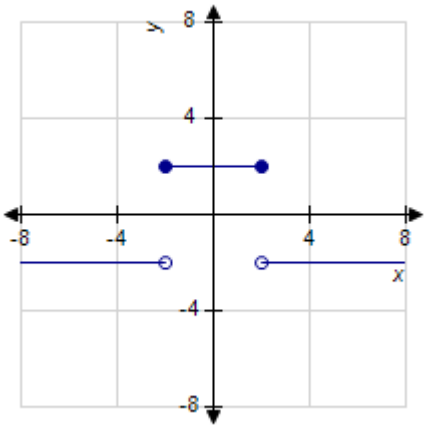
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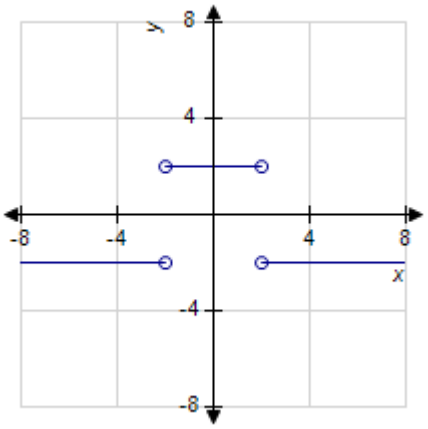
c.



d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
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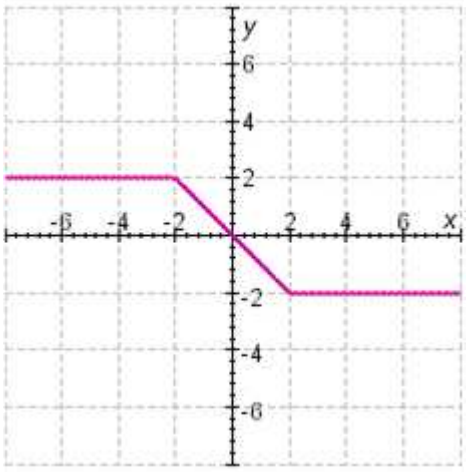
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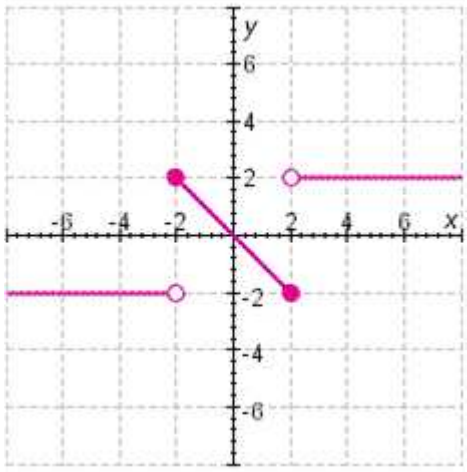
16. Sketch the graph of the piecewise defined function.

$$f(x)=\begin{cases} 2 \text{ if } x<-2 \\ -x \text{ if } -2\le x\le 2 \\ -2 \text{ if } x>2 \end{cases}$$

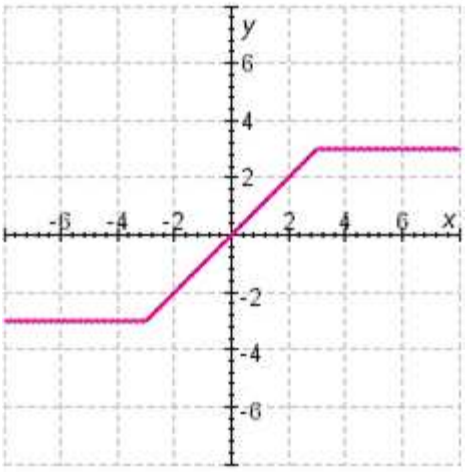
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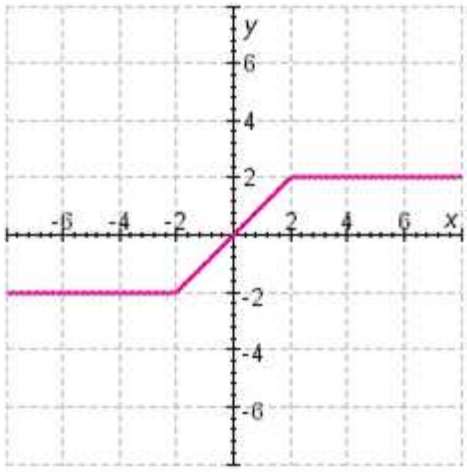
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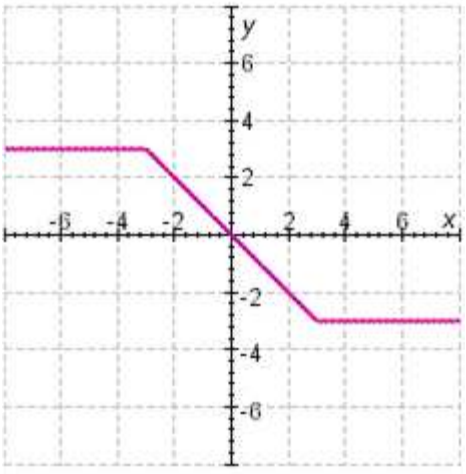
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d.



e.



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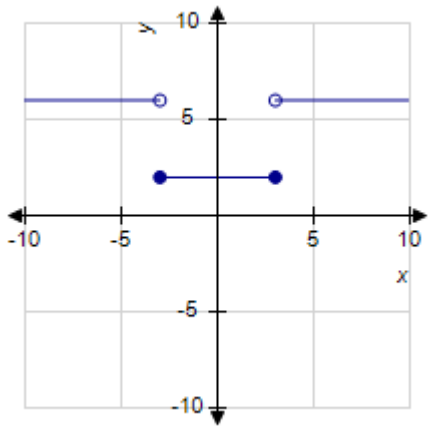
2.2 Graphs of Functions

ANSWER: a
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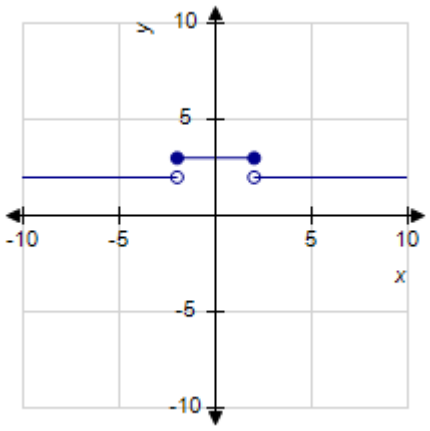
17. Select the correct graph of the function.

$$f(x)=\begin{cases}2 & \text{if } |x|\le 3\\ 6 & \text{if } |x|>3\end{cases}$$

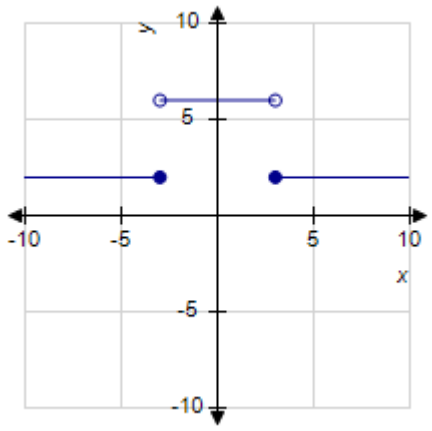
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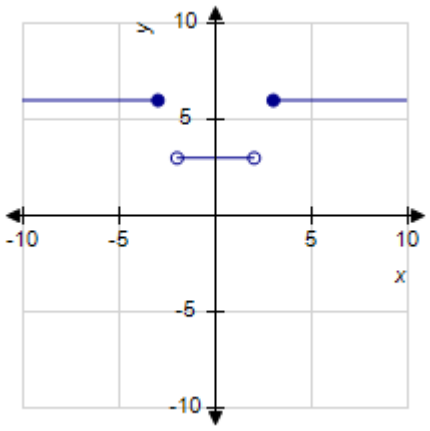
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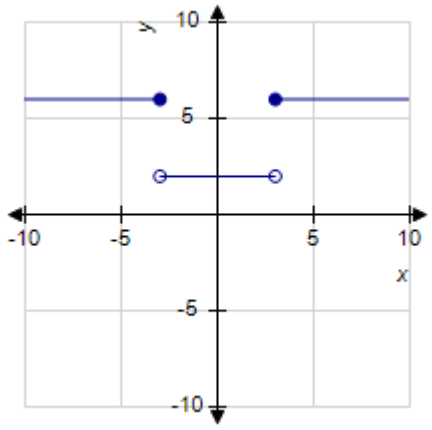
d.



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e.

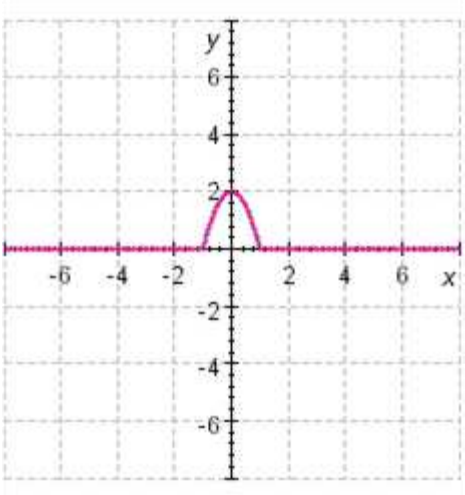


ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
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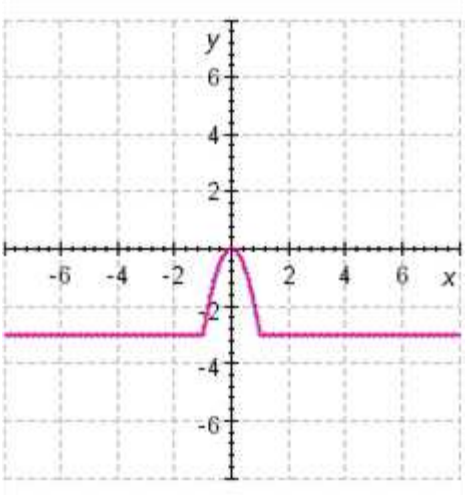
18. Sketch the graph of the piecewise defined function.

$$f(x)=\begin{cases} -2x^2 & \text{if } |x|\le 1 \\ -2 & \text{if } |x|>1 \end{cases}$$

a.



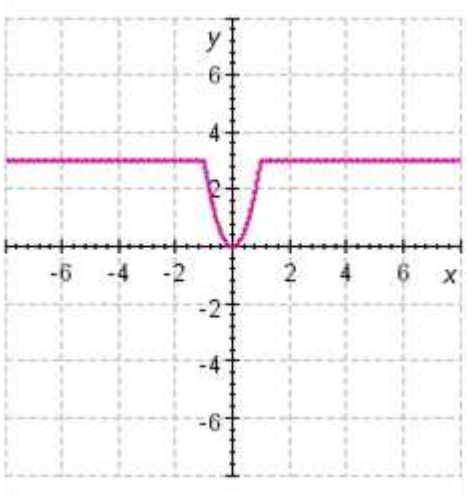
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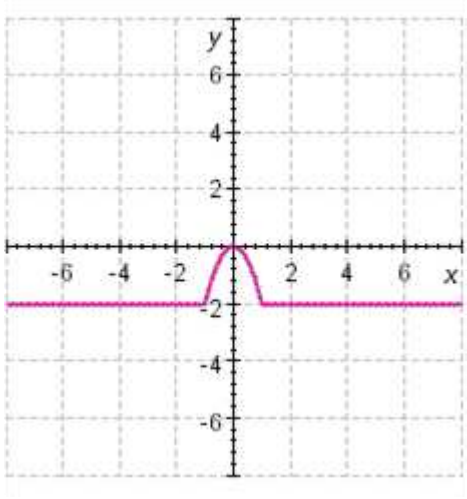
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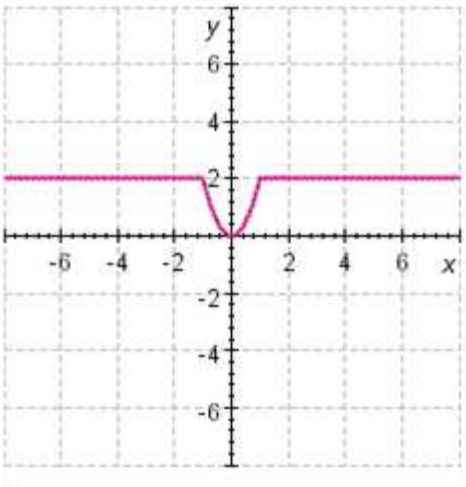
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d.



e.



ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
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STUDENT ENTRY MODE: Basic
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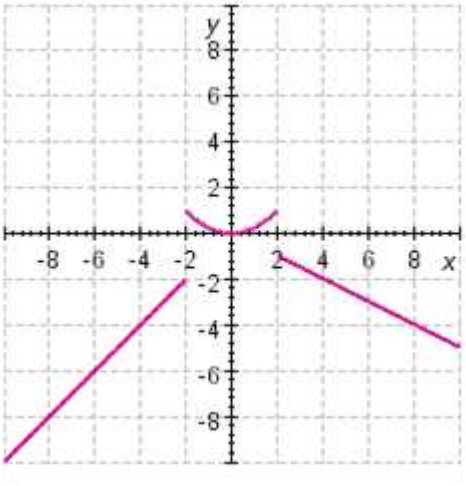
19. Sketch the graph of the piecewise defined function.

$$f(x)=\begin{cases} x & \text{if } x<-1 \\ x^2 & \text{if } -1\le x\le 1 \\ -x & \text{if } x>1 \end{cases}$$

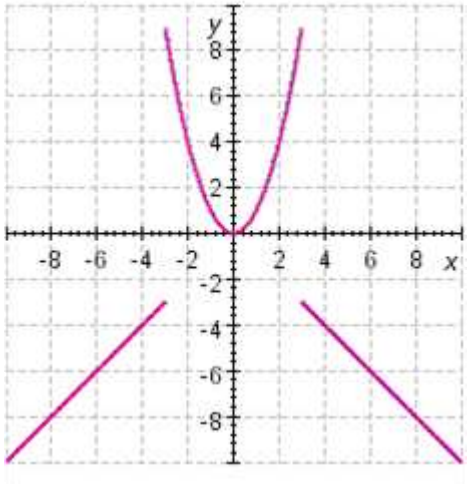
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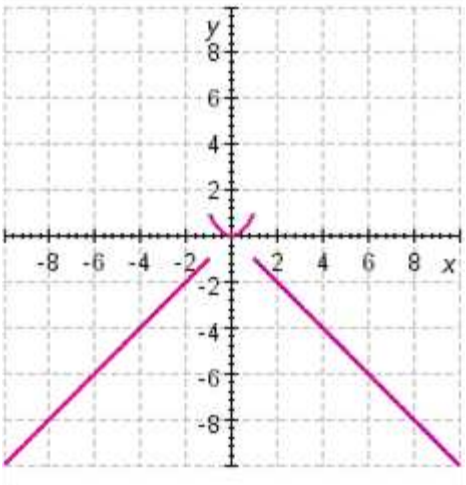
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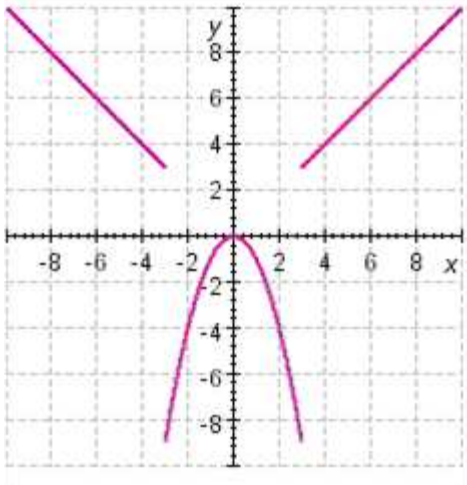
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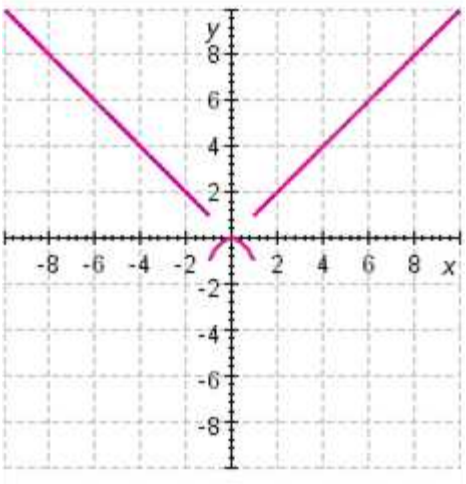
c.



d.



e.



ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 7/29/2014 2:56 AM

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20. Determine whether the equation defines y as a function of x.

$x^2 + 3y = 3$

a. no
b. yes

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/29/2014 2:58 AM

21. Determine whether the equation defines y as a function of x.

$4x + 7y = 28$

a. no
b. yes

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:32 AM

22. Determine whether the equation defines y as a function of x.

$x^2 + (y - 1)^2 = 16$

a. yes
b. no

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:33 AM

23. Determine whether the equation defines y as a function of x.

$5x - |y| = 0$

a. yes
b. no

ANSWER: b

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2.2 Graphs of Functions

POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:37 AM

24. Consider a family of functions $f(x) = 2(x - c)^3$. Graph all the given members of the family in the viewing rectangle indicated.

(a) $c = 0, 2, 4, 6$; [–10, 10] by [–20, 20]

(b) $c = 0, -2, -4, -6$; [–10, 10] by [–20, 20]

How does the value of c affect the graph?

a. The graphs in part **(a)** are obtained by shifting the graph of $f(x) = 2x^3$ to the left and downwards c units, $c > 0$. The graphs in part **(b)** are obtained by shifting the graph of $f(x) = 2x^3$ to the right and up $|c|$ units, $c < 0$

b. The graphs in part **(a)** are obtained by shifting the graph of $f(x) = 2x^3$ to the right c units, $c > 0$. The graphs in part **(b)** are obtained by shifting the graph of $f(x) = 2x^3$ to the left $|c|$ units, $c < 0$.

c. The graphs in part **(a)** are obtained by shifting the graph of $f(x) = 2x^3$ downwards c units, $c > 0$. The graphs in part **(b)** are obtained by shifting the graph of $f(x) = 2x^3$ up $|c|$ units, $c < 0$.

d. The graphs in part **(a)** are obtained by shifting the graph of $f(x) = 2x^3$ up c units, $c > 0$. The graphs in part **(b)** are obtained by shifting downwards the graph of $f(x) = 2x^3$ $|c|$ units, $c < 0$.

e. The graphs in part **(a)** are obtained by shifting the graph of $f(x) = 2x^3$ to the left c units, $c > 0$. The graphs in part **(b)** are obtained by shifting the graph of $f(x) = 2x^3$ to the right $|c|$ units, $c < 0$.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:59 AM

25. A taxi company charges \$3.00 for the first mile (or part of a mile) and 30 cents for each succeeding tenth of a mile (or part). Express the cost C (in dollars) of a ride as a function of the distance x traveled (in miles) for $0 < x < 2$.

a. $C(x) = \begin{cases} 3x & \text{for } 1 < x < 2 \\ 3.00 & \text{for } 0 < x \le 1 \end{cases}$

b. $C(x) = 3x$ for $0 < x < 2$

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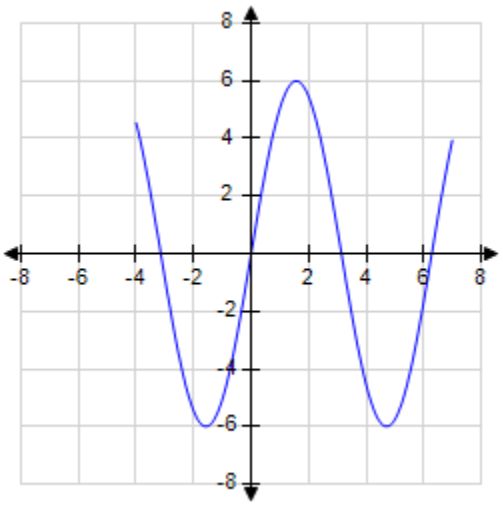
c.
$$C(x) = \begin{cases} 3.00 & \text{for } 0 < x \le 1 \\ 3.30 & \text{for } 1 < x \le 1.2 \\ 3.60 & \text{for } 1.2 < x \le 1.4 \\ \ldots & \\ \ldots & \\ \ldots & \\ 6.00 & \text{for } 1.8 < x \le 2.0 \end{cases}$$

d.
$$C(x) = \begin{cases} 3.00 & \text{for } 0 < x \le 1 \\ 3.30 & \text{for } 1 < x \le 1.1 \\ 3.60 & \text{for } 1.1 < x \le 1.2 \\ \ldots & \\ \ldots & \\ \ldots & \\ 6.00 & \text{for } 1.9 < x \le 2.0 \end{cases}$$

e.
$$C(x) = \begin{cases} 3.00 & \text{for } 0 < x \le 1 \\ 3x & \text{for } 1 < x < 2 \end{cases}$$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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26. Find the domain and range of the function. Express your answers in interval notation.



Domain: _____ , Range: _____

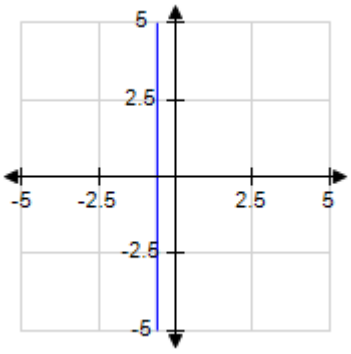
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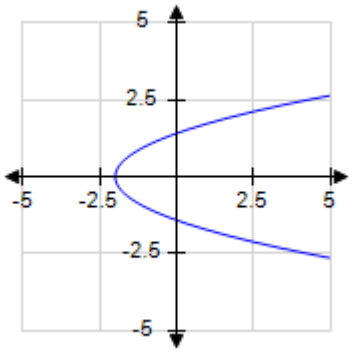
ANSWER: [–4, 7], [–6, 6]
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.55
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27. Which of the following curves is a graph of a function of x?

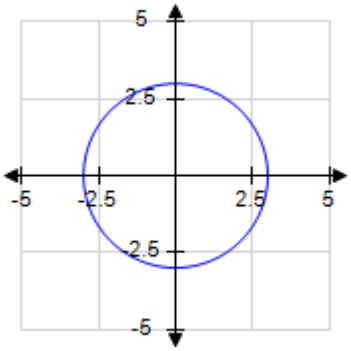
a.



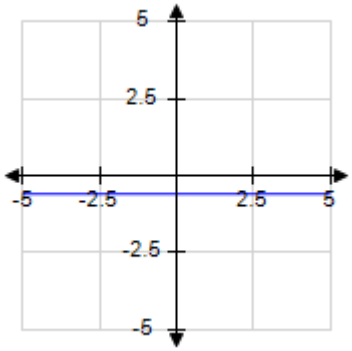
b.



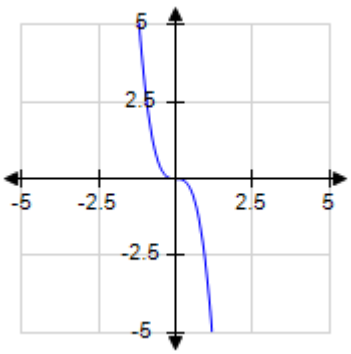
c.



d.



e.



ANSWER: d, e
POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True
OTHER: srca.03.02.53m

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2.2 Graphs of Functions

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28. A family of functions is given. Use a graphing device to graph all the given members of the family in the viewing rectangle indicated. Use the graphs to describe how the value of c affects the graph.

$f(x) = x^4 + c$

(a) $c = 0, 2, 4, 6$; $[-5, 5]$ by $[-10, 10]$

(b) $c = 0, -2, -4, -6$; $[-5, 5]$ by $[-10, 10]$

ANSWER: If $c > 0$ then the graph of $f(x) = x^4 + c$ is the same as the graph of $y = x^4$ shifted upward c units. If $c < 0$ then the graph of $f(x) = x^4 + c$ is the same as the graph of $y = x^4$ shifted downward c units.

POINTS: 1
QUESTION TYPE: Essay
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.71
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29. A family of functions is given. Use a graphing device to graph all the given members of the family in the viewing rectangle indicated. Use the graphs to describe how the value of c affects the graph.

$f(x) = cx^2$

(a) $c = 1, \frac{1}{2}, 2, 4$; $[-5, 5]$ by $[-10, 10]$.

(b) $c = 1, -\frac{1}{2}, -1, -2$; $[-5, 5]$ by $[-10, 10]$.

ANSWER: If $|c| < 1$ then the graph of $f(x) = cx^2$ is wider than the graph of $y = x^2$. If $|c| > 1$ then the graph of $f(x) = cx^2$ is narrower than the graph of $y = x^2$. If $c < 0$ then the graph of $f(x) = cx^2$ is the same as the graph of $y = x^2$ but reflected about the x-axis.

POINTS: 1
QUESTION TYPE: Essay
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.02.74
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30. The graph of $f(x) = -7$ is a horizontal line.
    a. True

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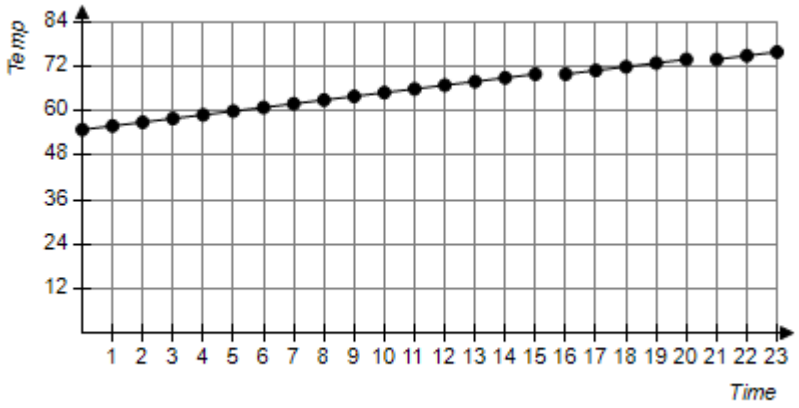
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b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
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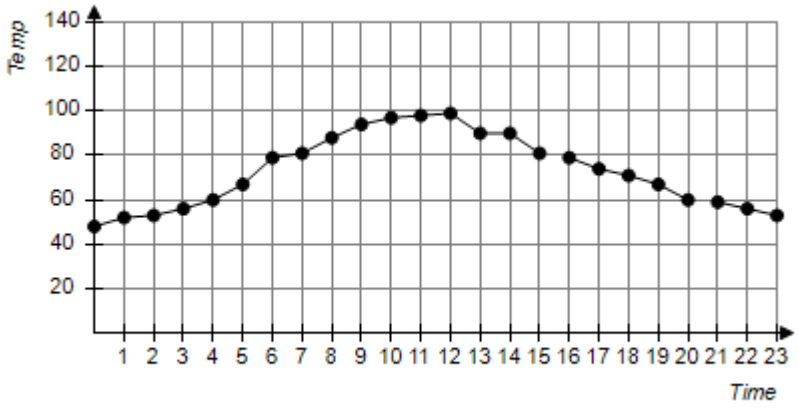
31. The temperature (in °F) of a town is taken at the beginning of each hour throughout one day starting at 5 a.m. Let T be the function defined by $T(x)$ = temperature of the town at time x. Which one of the following graphs represents this scenario?

a.



b. Not enough information

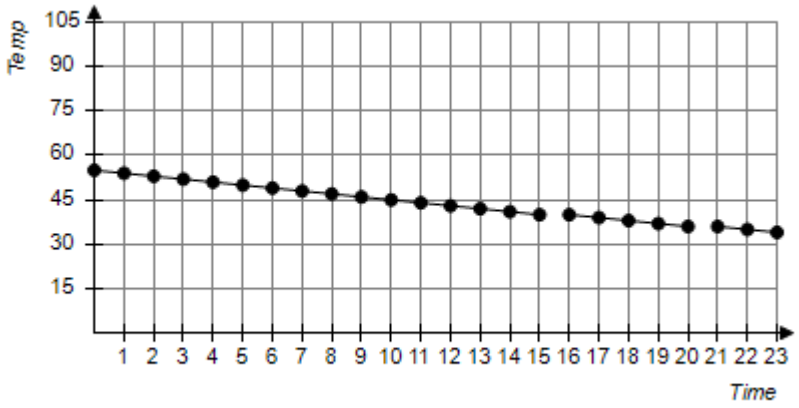
c.



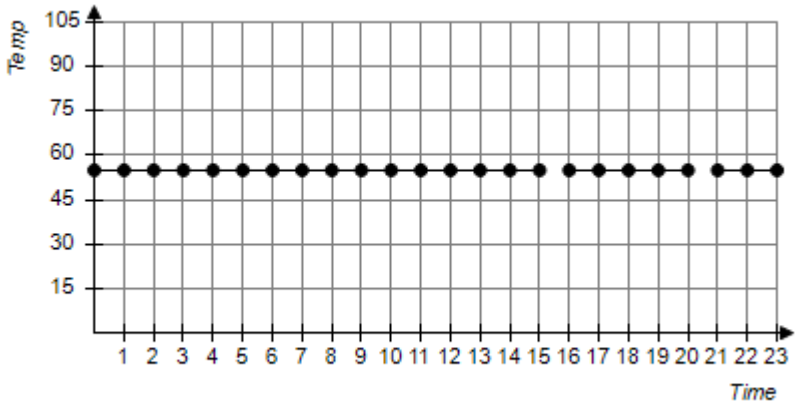
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d.



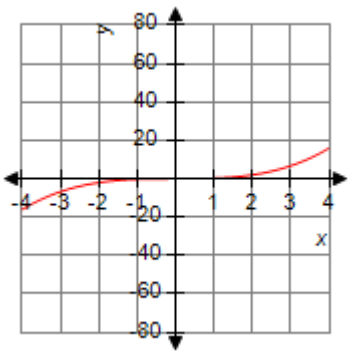
e.



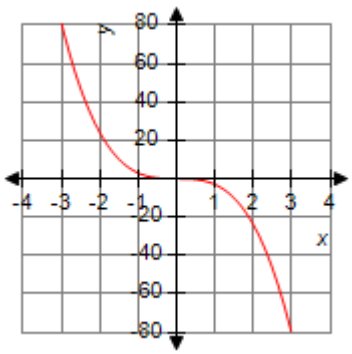
ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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32. Which one of the following represents the graph of $f(x) = 3x^3$?

a.



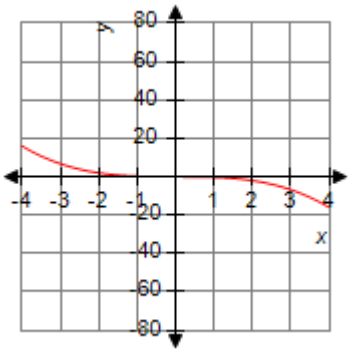
b.



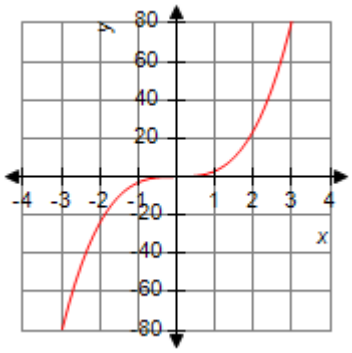
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c.



d.



e. None of the above

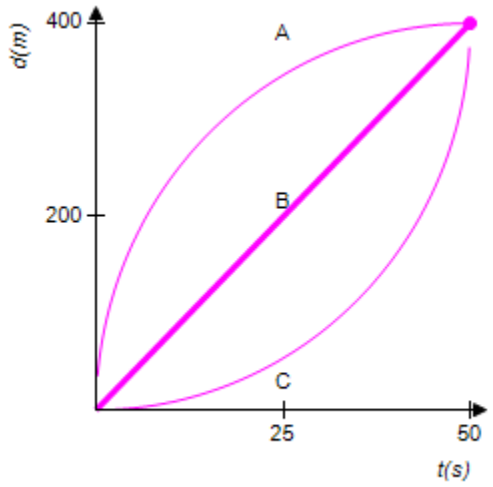
ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.3 Getting Information from the Graph of a Func

1. A 400-m race ends in a three-way tie for first place. The graph shows distance as a function of time for each of the three winners. Find the average speed for each winner.



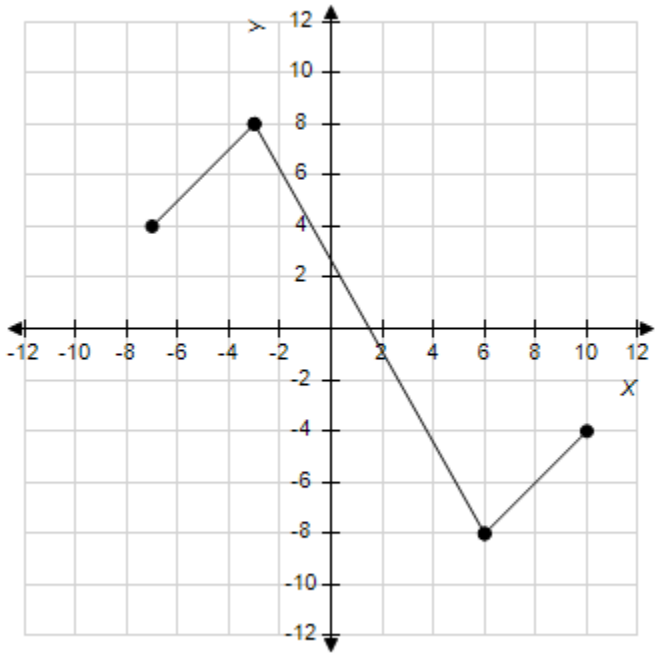
a. A: 8 m/sec, B: 8 m/sec, C: 8 m/sec
b. A: 4 m/sec, B: 4 m/sec, C: 4 m/sec
c. A: 8 m/sec, B: 8 m/sec, C: 4 m/sec
d. A: 4 m/sec, B: 8 m/sec, C: 8 m/sec
e. A: 4 m/sec, B: 8 m/sec, C: 4 m/sec

ANSWER:	a
POINTS:	1
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
OTHER:	srca.03.03.37m
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2. Determine the interval on which the function in the graph below is decreasing.

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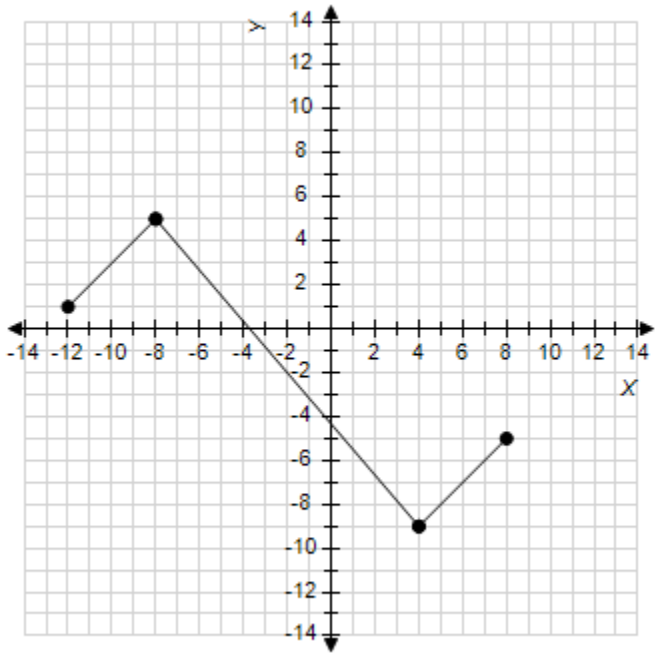
a. [4, –1]
b. [–7, –3]
c. [–3, 6]
d. [–2, 7]
e. [6, 10]

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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3. Determine the interval on which the function in the graph below is decreasing.

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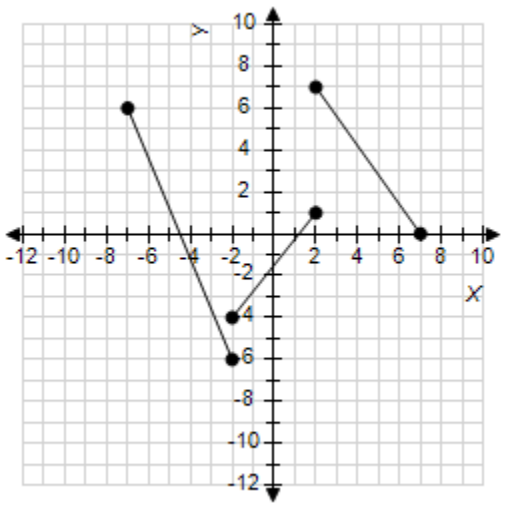
a. [4, 8]
b. [–8, 4]
c. [–1, –3]
d. [–7, 5]
e. [–12, –8]

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.01m
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4. Determine the interval on which the function in the graph below is increasing.

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a. [–2, 2]
b. [–2, –7]
c. [–7, –2]
d. (2, –3)
e. [2, 7]

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.04m
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5. Find all of the local minimum values of the function below, and the value of x at which each occurs.

$g(x) = x^4 - 4x^3 - 3x^2$

All of the values were rounded to the nearest hundredth.

a. $g\ (0.44) = -0.20$, $g\ (3.44) = 58.30$
b. $g\ (-0.44) = -0.20$, $g\ (3.44) = -58.30$
c. $g\ (-0.44) = -2.23$, $g\ (4.24) = -58.30$
d. $g\ (-0.20) = -0.44$, $g\ (-58.30) = -3.44$
e. $g\ (-0.44) = -1.20$, $g\ (3.64) = -58.30$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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6. Find the local maximum and minimum values of the function below, and the value of x at which it occurs.

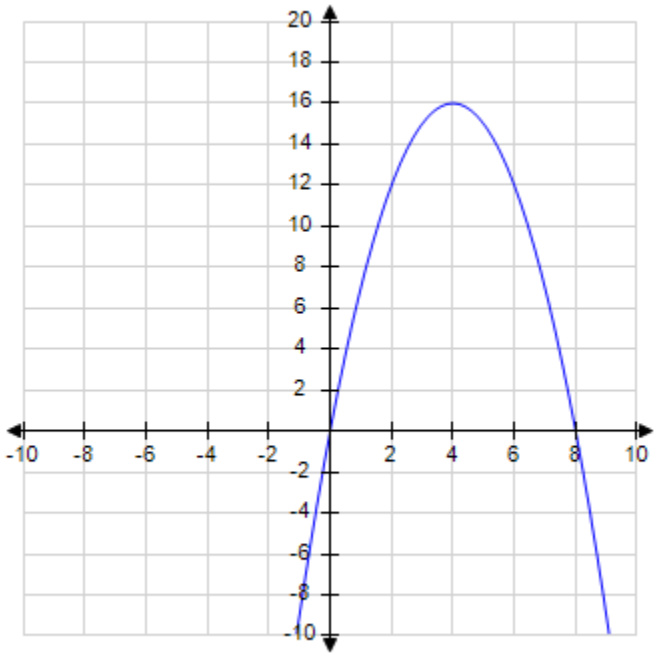
$U(x) = x\sqrt{6-x}$

All of the values were rounded to the nearest hundredth.

a. max = 5.66, $x = 4$
b. max = 7.66, $x = 4.05$
c. min = 6.7, $x = -4$
d. min = 5.66, $x = 4$
e. min = –5.66, $x = 4$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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7. The graph of the function $y = -x^2 + 8x$ is:



Find its maximum or minimum value.

a. min = 16
b. max = 16
c. max = 24

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d. min = –32
e. min = –16

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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8. Find the local maximum and minimum values of the function below, and the value of x at which each occurs.

$$V(x) = \frac{5 - x^2}{x^3}$$

All the values were rounded to the nearest hundredth.

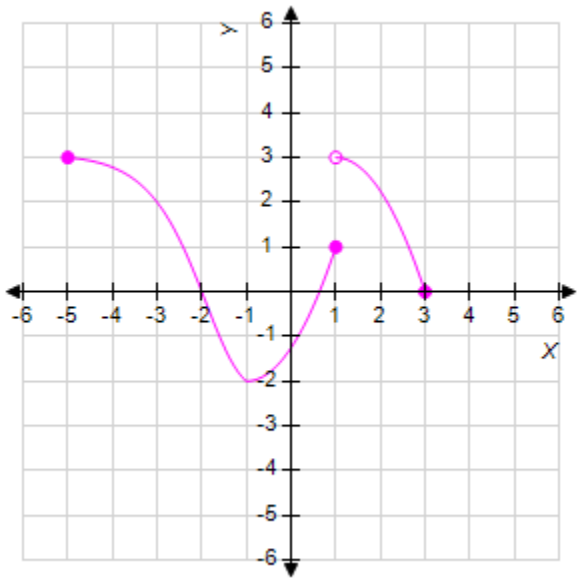
a. max = 0.17, x = –3.87, min = –0.17, x = –3.87
b. max = 0.17, x = 3.87, min = –0.17, x = –3.87
c. max = 0.17, x = –3.87, min = –0.17, x = 3.87
d. max = 0.37, x = –4.88, min = –3.18, x = 3.99
e. max = 2.4, x = –3.88, min = –0.18, x = 5.07

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
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9. The graph of a function g is given.

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(a) Find $g(-5)$.

(b) Find $g(-3)$.

(c) Find $g(-1)$.

(d) Find $g(1)$.

(e) Find $g(3)$.

(f) Find the domain of g.

(g) Find the range of g.

ANSWER: 3; 2; –2; 1; 0; [–5, 3]; [–2, 3]
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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10. Find the local maximum and minimum values of the function and the value of x at which each occurs. State each answer correct to two decimal places.

$$f(x) = 1 + x + 2x^2 - x^3$$

Find the local maximum values.

Find the value of x at which maximum occurs.

Find the local minimum values.

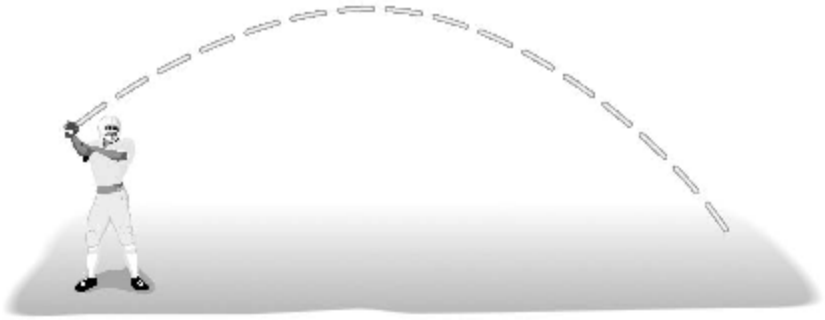
Find the value of x at which minimum occurs.

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ANSWER: $f(x) = 3.63$; $x = 1.55$; $f(x) = 0.89$; $x = -0.22$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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11. A ball is thrown across a playing field. Its path is given by the equation $y = -0.005x^2 + x + 5$, where x is the distance the ball has traveled horizontally, and y is its height above ground level, both measured in feet.



(a) What is the maximum height attained by the ball?

_____ ft

(b) How far has it traveled horizontally when it hits the ground? Please round your answer to the nearest tenth.

_____ ft

ANSWER: 55; 204.9
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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12. Consider the function $f(x) = 2x - 9$. What is the name of the function? What is the input? What is the output?

a. Name: f; Input: x; Output: $2x - 9$
b. Name: $f(x)$; Input: x; Output: $2x - 9$
c. Name: $f(x)$; Input: $2x - 9$; Output: x
d. Name: $f(x)$; Input: x; Output: f
e. Name: f; Input: $2x - 9$; Output: x

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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13. Let $f(x) = 5x^2 + 5x - 3$. Find $f(-4)$.

a. 82 b. –43 c. 60 d. 57
e. –103

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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14. A ball is thrown straight upward from a bridge and then falls all the way to the ground (past the bridge). The ball's height h (in feet) above the ground t seconds after the ball is thrown is given by $h(t) = -16t^2 + 48t + 113$. What is the meaning of $h(4)$?

a. After 4 seconds, the height of the ball is 241 feet above ground.
b. After 4 seconds, the height of the ball is 49 feet above ground.
c. After 4 seconds, the height of the ball is 113 feet above ground.
d. After 4 seconds, the height of the ball is 64 feet above ground.
e. After 4 seconds, the height of the ball is 3791 feet above ground.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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15. A ball is thrown straight upward from a bridge and then falls all the way to the ground (past the bridge). The ball's height h (in feet) above the ground t seconds after the ball is thrown is given by $h(t) = -16t^2 + 48t + 112$. Find the net change in the height of the ball from time $t = 2.5$ seconds to $t = 3$ seconds.

a. 16 feet b. 112 feet c. –132 feet d. –20 feet
e. 0.5 feet

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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16. Find the domain of $f(x) = \dfrac{2}{x(x+7)}$.

a. $\{x \mid x \neq 2 \text{ and } x \neq -7\}$

b. $\{x \mid x \neq -7\}$

c. $\{x \mid x \neq 0, x \neq 2 \text{ and } x \neq -7\}$

d. $\{x \mid x \neq 0\}$

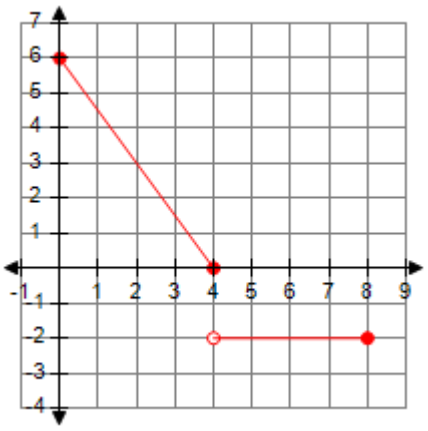
e. $\{x \mid x \neq 0 \text{ and } x \neq -7\}$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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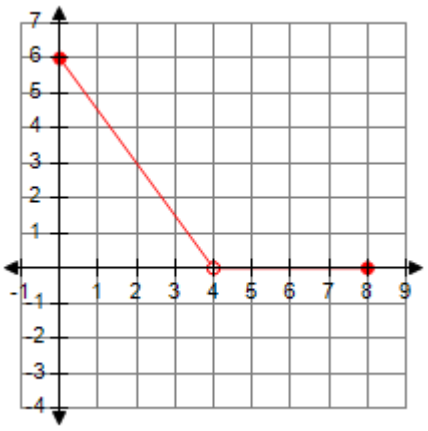
17. Which one of the following graphs represent the function:

$$C(x) = \begin{cases} 6 - \left(\frac{3}{2}\right)x & \text{if } 0 \leq x \leq 4 \\ -2 & \text{if } 4 < x \leq 8 \end{cases}$$

a.



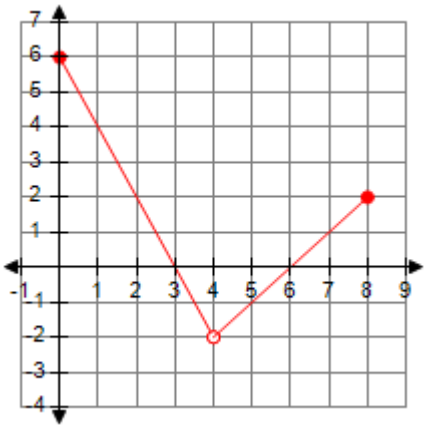
b.



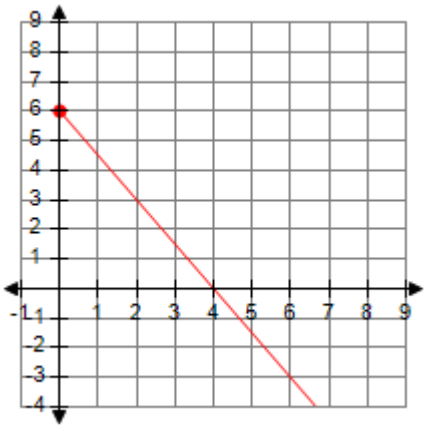
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c.



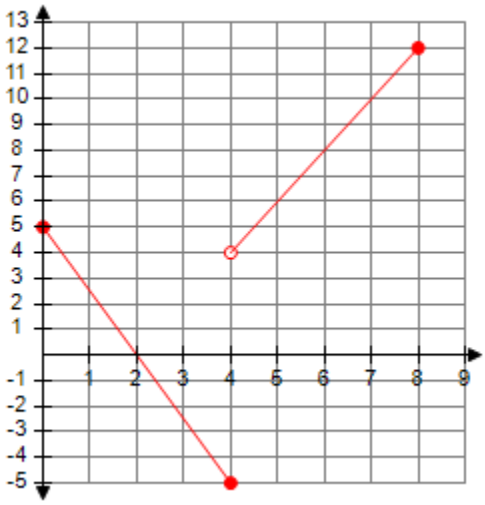
d.



e. None of these options.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: True
DATE CREATED: 7/16/2014 6:03 AM
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18. Use the following graph to create an algebra model for the function.



a. $f(x) = \begin{cases} 2.5 + 5x & \text{if } 0 \le x \le 4 \\ -4 + 2x & \text{if } 4 < x \le 8 \end{cases}$

b. $f(x) = \begin{cases} 5 + 2.5x & \text{if } 0 \le x \le 4 \\ -4 + 2x & \text{if } 4 < x \le 8 \end{cases}$

c. $f(x) = \begin{cases} 5 - 2.5x & \text{if } 0 \le x \le 4 \\ -4 + 2x & \text{if } 4 < x \le 8 \end{cases}$

d. $f(x) = \begin{cases} 5 - 2.5x & \text{if } 0 \le x < 4 \\ 1 + 2x & \text{if } 4 \le x \le 8 \end{cases}$

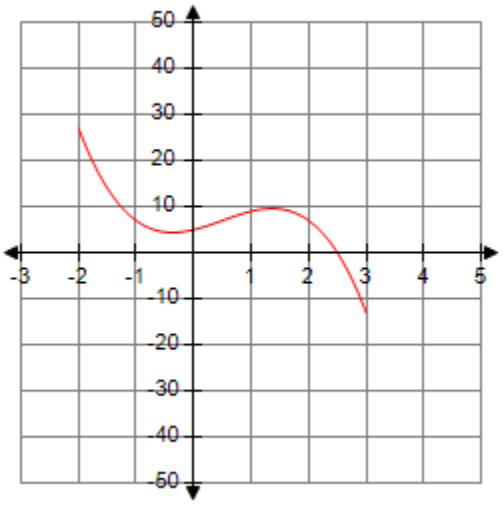
e. $f(x) = \begin{cases} 5 + 2.5x & \text{if } 0 \le x < 4 \\ -4 + 2x & \text{if } 4 \le x \le 8 \end{cases}$

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ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 7/16/2014 8:55 AM

19. Determine the domain and range of the function represented by the graph.



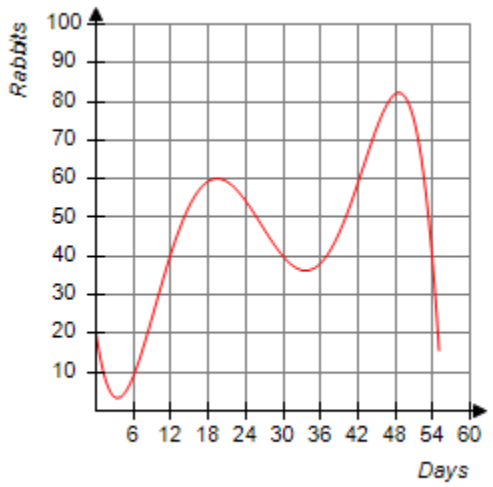
a. Domain: [-12, 27]; Range: [-2, 3]
b. Domain: [2.5, 0]; Range: [0, 5]
c. Domain: [0, ∞]; Range: [0, ∞]
d. Domain: [-2, 3]; Range: [-12, 27]
e. Domain: [-2, -12]; Range: [3, 27]

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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20. A population of rabbits was tracked over a 55-day period. The data is shown in the following graph. How did the population of rabbits change between day 3 and day 20?

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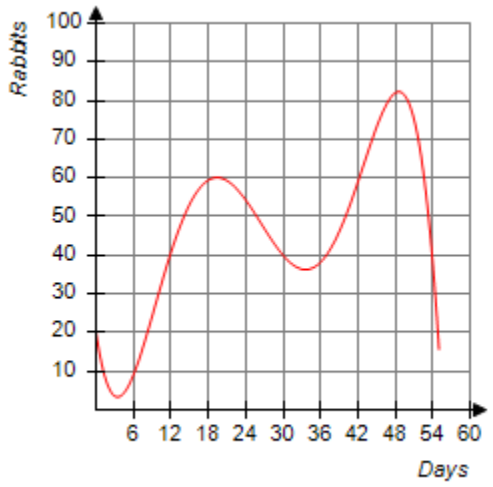
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a. The population of rabbits increased from approximately 5 rabbits to 83 rabbits.
b. The population of rabbits decreased from approximately 83 rabbits to 5 rabbits.
c. The population of rabbits increased from approximately 5 rabbits to 61 rabbits.
d. The population of rabbits was constant during this time period.
e. The population of rabbits decreased from approximately 61 rabbits to 5 rabbits.

ANSWER:	c
POINTS:	1
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
DATE CREATED:	6/11/2014 8:13 AM
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21. A population of rabbits was tracked over a 55-day period. The data is shown in the following graph. What was the maximum number of rabbits during this time period?



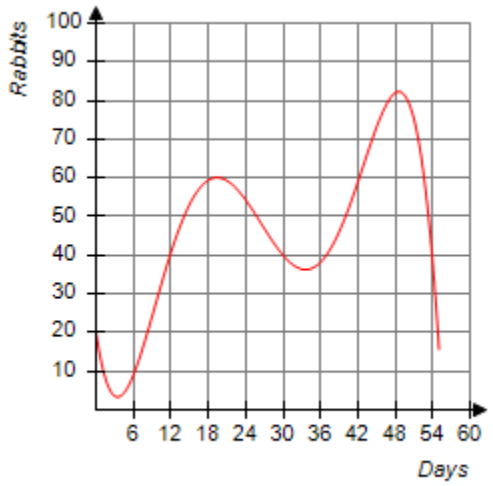
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a. 61
b. 49
c. 38
d. 15
e. 83

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 9:24 AM
DATE MODIFIED: 7/16/2014 9:25 AM

22. A population of rabbits was tracked over a 55-day period. The data is shown in the following graph. What was the minimum number of rabbits during this time?



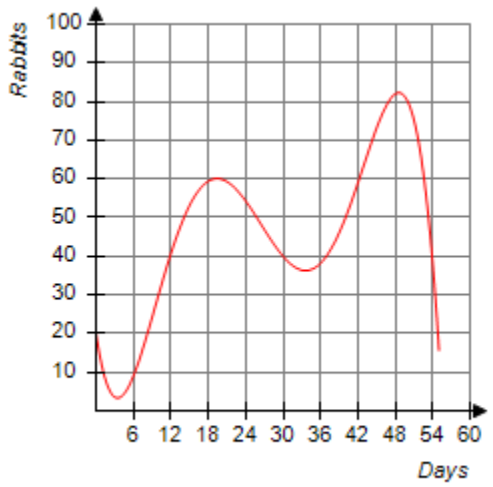
a. 20
b. 37
c. 83
d. 5
e. 15

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 9:25 AM
DATE MODIFIED: 7/16/2014 9:27 AM

23. A population of rabbits was tracked over a 55-day period. The data is shown in the following graph. What was the approximate number of rabbits on day 30?

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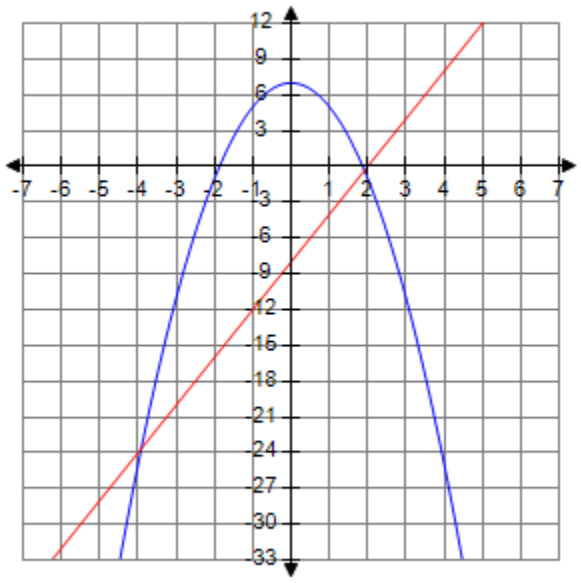
a. 40
b. 15
c. 10
d. 30
e. 83

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 9:27 AM
DATE MODIFIED: 7/16/2014 9:45 AM

24. The graphs of $f(x) = 4x - 8$ and $g(x) = -2x^2 + 7$ are shown below. Find the value(s) of x for which $f(x) = g(x)$.

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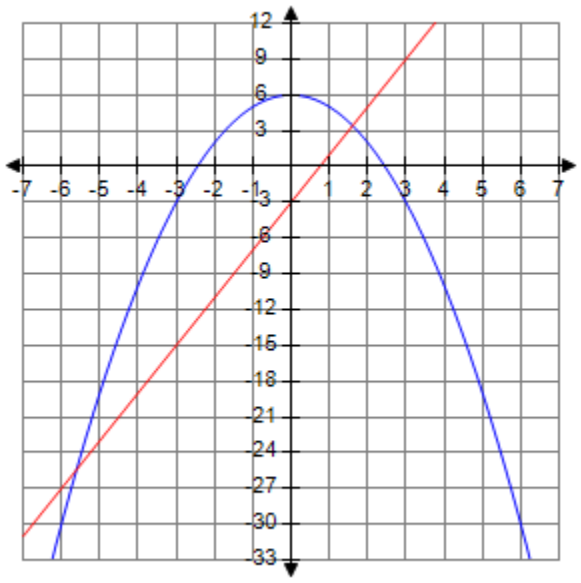
a. –3.9 and 1.9 b. 1.9 c. –3.9 and –23.7
d. –3.9 e. –23.7 and –0.3

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 9:51 AM

25. The graphs of $f(x) = 4x-3$ and $g(x) = -x^2 + 6$ are shown below. Find the value(s) of x for which $g(x) > f(x)$.

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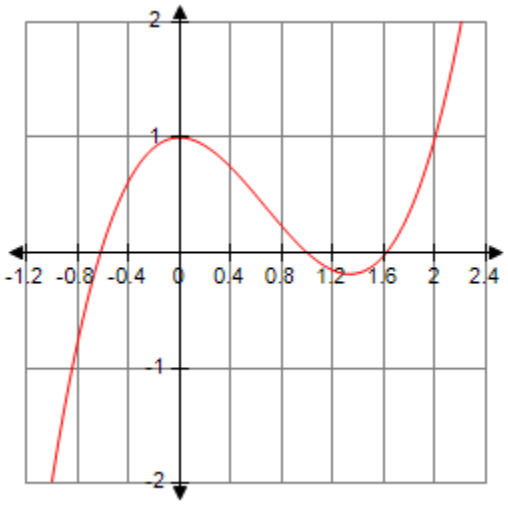
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a. $-5.6 < x < 1.6$ b. $x > 1.6$ c. $x < 1.6$
d. $x > -5.6$ e. $-25.4 < x < 3.4$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 9:55 AM
DATE MODIFIED: 7/16/2014 10:02 AM

26. For the function $f(x) = x^3 - 2x^2 + 1$, find the intervals on which f is increasing.



a. $-\infty < x < \infty$ b. $x > 1.3$ c. $0 < x < 1.3$

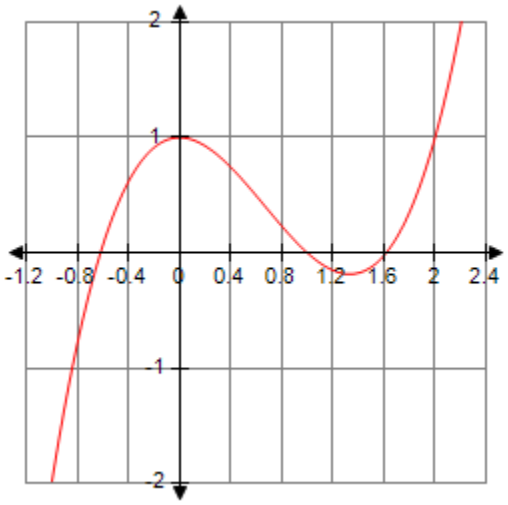
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d. $x < 0$ e. $x < 0$ and $x > 1.\overline{3}$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:18 AM

27. For the function $f(x) = x^3 - 2x^2 + 1$, find the local maximum value of f.



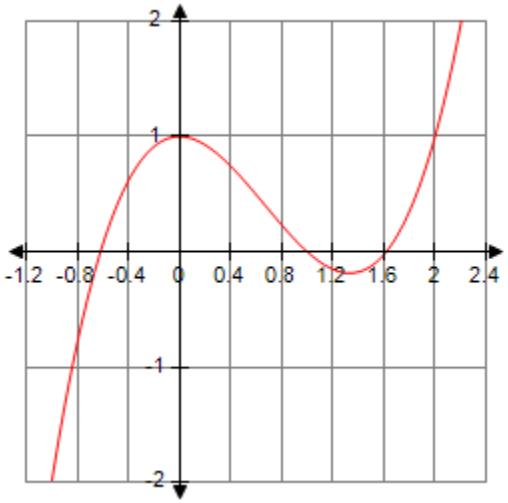
a. 1.6 b. -0.6 c. 0
d. 1 e. 0.25

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 10:12 AM
DATE MODIFIED: 7/16/2014 10:15 AM

28. For the function $f(x) = x^3 - 2x^2 + 1$, find the local minimum value of f.

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a. -0.6 b. -0.185 c. -1
d. 1 e. 1.6

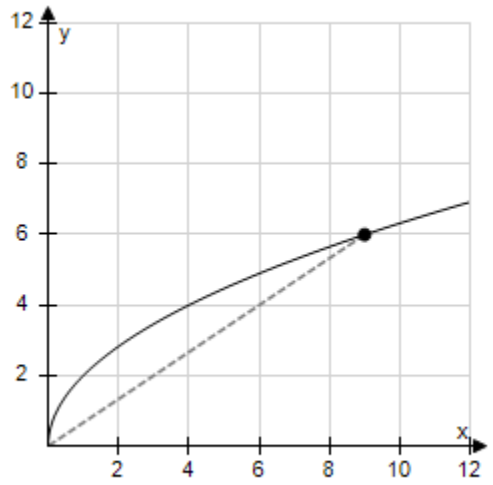
ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 7/16/2014 10:13 AM
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2.4 Average Rate of Change of a Function

1. The graph of a function is given below. What is the average rate of change of the function between the indicated values of the variable?



a. $-\frac{1}{2}$

b. $\frac{1}{2}$

c. $\frac{2}{3}$

d. $-\frac{2}{3}$

e. $\frac{2}{9}$

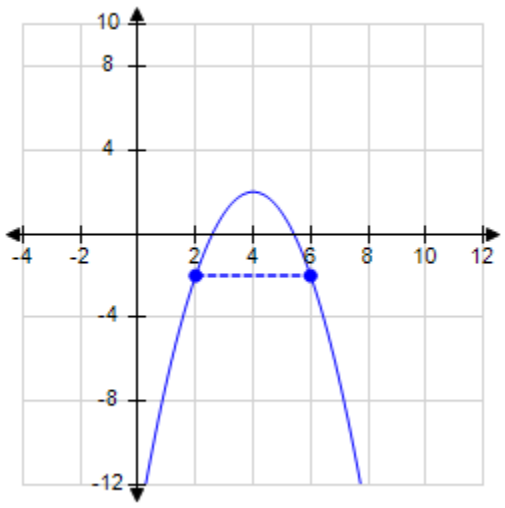
ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.13m
DATE CREATED: 6/11/2014 8:13 AM
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2. The graph of a function is given below. What is the average rate of change of the function between the indicated values of the variable?

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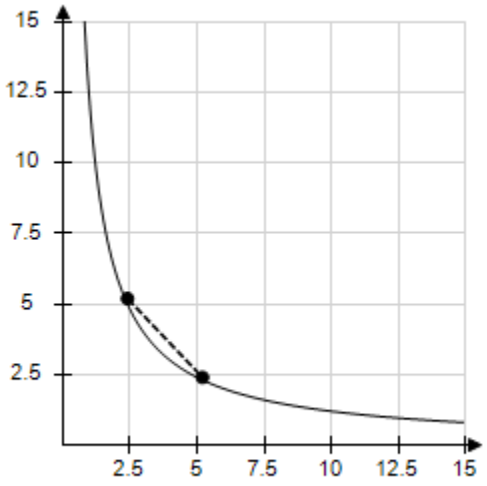
2.4 Average Rate of Change of a Function



a. –1
b. 3
c. 0
d. 1

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.14m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:49 AM

3. The graph of a function is given below. What is the average rate of change of the function between the indicated values of the variable?



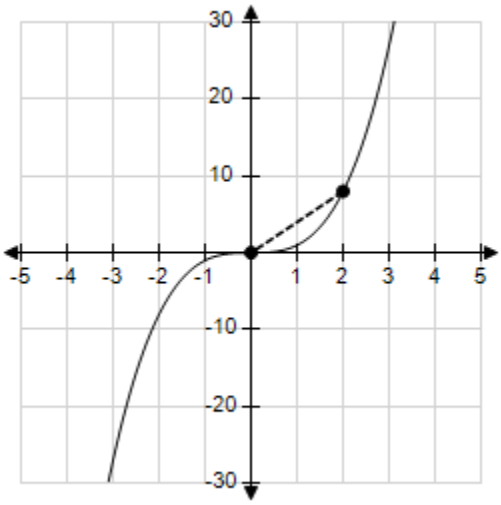
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a. -1
b. $-\frac{1}{6}$
c. -6
d. 6
e. 1

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.15m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:59 AM

4. The graph of a function is given below. What is the average rate of change of the function between the indicated values of the variable?



a. -4
b. 2
c. -2
d. $-\frac{1}{4}$
e. 4

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic

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2.4 Average Rate of Change of a Function

OTHER: srca.03.03.16m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:11 AM

5. What is the average rate of change of the function $f(x) = 8x - 2$ between $x = 7$ and $x = 8$?

a. 7
b. 9
c. 8
d. 11
e. 5

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.17m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 12:18 AM

6. Find the average rate of change for the function $f(x) = \frac{1}{8}x + 3$ between $x = a$ and $x = a + h$.

a. –8
b. $\frac{1}{8}$
c. $\frac{1}{64}$
d. 8
e. $-\frac{1}{8}$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.29m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:17 AM

7. What is the average rate of change of the function $f(x) = t^2 - 9t$ between $t = -3$ and $t = -2$?

a. –8
b. –12

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c. –6
d. –14
e. –11

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.19m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 12:28 AM

8. What is the average rate of change of the function $f(x) = x^3 - 6x^2$ between $x = 0$ and $x = 2$?

a. –12
b. –15
c. –8
d. –10
e. –9

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.21m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 12:30 AM

9. What is the average rate of change of the function $f(x) = x + x^3$ between $x = 0$ and $x = 2$?

a. 4
b. 9
c. 7
d. 5
e. 6

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.22m
DATE CREATED: 6/11/2014 8:13 AM
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2.4 Average Rate of Change of a Function

10. Determine the average rate of change for the function $f(x) = \frac{1}{x}$ between $x = 1$ and $x = 7$.

a. $\frac{1}{343}$

b. $-\frac{1}{7}$

c. $\frac{1}{7}$

d. $-\frac{1}{49}$

e. $-\frac{1}{343}$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.25m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 12:38 AM

11. What is the average rate of change of the function $f(x) = \sqrt{x}$ between $x = 36$ and $x = 49$?

a. $-\frac{1}{13}$

b. $-\frac{1}{169}$

c. $\frac{1}{13}$

d. 13

e. $\frac{1}{169}$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.28m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 12:45 AM

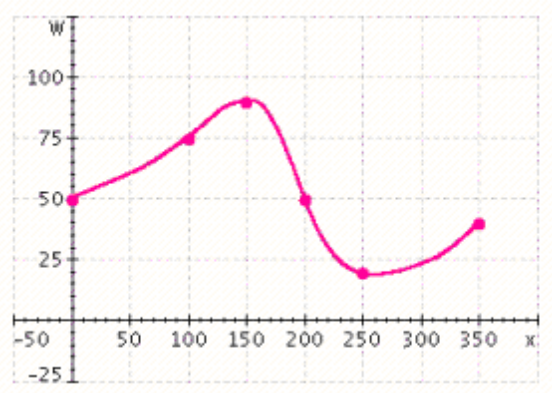
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2.4 Average Rate of Change of a Function

12. The graph shows the depth of water W in a reservoir over a one-year period, as a function of the number of days x since the beginning of the year.

What was the average rate of change in W between $x = 0$ and $x = 100$?



a. 0.25
b. 0.24
c. 0.255
d. 0.15
e. 0.3

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.31m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:18 AM

13. A man is running around a circular track 200 m in circumference. An observer uses a stopwatch to time each lap, obtaining the data in the table as follows:

Time (s)	Distance (m)
38	200
82	400
132	600
188	800
250	1,000
318	1,200
392	1,400

What was the man's average speed (rate) between 82s and 188s?

a. 3.77 m/s
b. 1.71 m/s
c. 4.77 m/s
d. 2.77 m/s
e. 7.54 m/s

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2.4 Average Rate of Change of a Function

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.34am
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:53 AM

14. The table below shows the number of CD players sold in a small electronics store in the years 1989-1999:

Year	CD players sold
1989	550
1990	570
1991	740
1992	710
1993	740
1994	670
1995	730
1996	725
1997	560
1998	570
1999	660

What was the average rate of change of sales between 1989 and 1999?

a. 110 CD players/year
b. 11 CD players/year
c. 660 CD players/year
d. 27.5 CD players/year
e. 66 CD players/year

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.35am
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:28 AM

15. The table below shows the number of CD players sold in a small electronics store in the years 1989-1999.

Year	CD players sold
1989	515
1990	450
1991	530
1992	635
1993	640
1994	570

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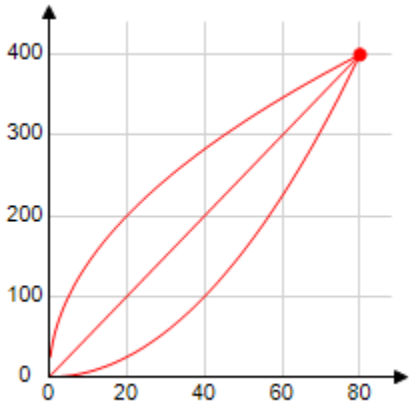
1995	670
1996	595
1997	655
1998	745
1999	605

Between which two successive years did CD player sales increase most quickly?

a. 1997, 1998
b. 1995, 1996
c. 1998, 1999
d. 1989, 1990
e. none of these

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.35dm
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:31 AM

16. A 100-m race ends in a three-way tie for first place. The graph shows distance as a function of time for each of the three winners. Find the average speed for each winner.



a. A: 5 m/sec, B: 5 m/sec, C: 5 m/sec
b. A: 10 m/sec, B: 10 m/sec, C: 10 m/sec
c. A: 5 m/sec, B: 5 m/sec, C: 10 m/sec
d. A: 10 m/sec, B: 5 m/sec, C: 5 m/sec
e. A: 10 m/sec, B: 5 m/sec, C: 10 m/sec

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic

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2.4 Average Rate of Change of a Function

OTHER: srca.03.03.37m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/19/2014 2:10 AM

17. Determine the average rate of change of the function $f(t) = t^2 - 4t$ between $t = -5$ and $t = -4$.
ANSWER: –13
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.19
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:36 AM

18. Determine the average rate of change of the function $f(x) = 9 - 7x$ between $x = 2$ and $x = 3$.
ANSWER: 7
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.18
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:38 AM

19. Determine the average rate of change of the function $f(x) = x^3 - 5x^2$ between $x = 0$ and $x = 10$.
ANSWER: 50
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.21
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:39 AM

20. Determine the average rate of change of the function $f(x) = x + x^4$ between $x = 0$ and $x = 2$.
ANSWER: 9
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.22
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:42 AM

21. A man is running around a circular track 200 m in circumference. An observer uses a stopwatch to time each lap, obtaining the data in the table as follows:

Time (s)	Distance (m)
32	200

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70	400
114	600
164	800
220	1,000
282	1,200
350	1,400

What was the man's average speed (rate) between 70*s* and 164*s*? Give the answer to two decimal places, if necessary.

_____ m/s

ANSWER: 4.26
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.34a
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/17/2014 1:45 AM

22. The table shows the number of CD players sold in a small electronics store in the years 1989-1999 as follows:

Year	CD players sold
1989	530
1990	645
1991	560
1992	725
1993	565
1994	565
1995	550
1996	580
1997	700
1998	555
1999	630

What was the average rate of change of sales between 1989 and 1999?

_____ CD players/year

ANSWER: 10
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.03.35a
DATE CREATED: 6/11/2014 8:13 AM
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23. A function is given. Determine the average rate of change of the function between the values of the variable.

$$g(x) = \frac{2}{x+1};\ x = 0,\ x = h$$

ANSWER: $-\dfrac{2}{h+1}$

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2.4 Average Rate of Change of a Function

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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24. Determine the average rate of change for the function $f(x) = \frac{1}{x}$ between $x = 1$ and $x = 3$.

ANSWER: $-\frac{1}{3}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.03.25
DATE CREATED: 6/11/2014 8:13 AM
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25. If $f(1) = 8$ and $f(7) = 16$, then the average rate of change of f between $x = 1$ and $x = 7$ is which of the following:

a. –8 b. 6 c. $\frac{3}{4}$ d. $\frac{4}{3}$

e. 8

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 4:35 AM

26. Using the following table of values, determine the average rate of change between $x = 1$ and $x = 5$.

x	0	1	2	3	4	5	6	7	8
$f(x)$	7	11	16	20	27	29	33	38	41

a. 29 b. $\frac{2}{9}$ c. $\frac{9}{2}$ d. 18

e. 4

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.4 Average Rate of Change of a Function

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27. Using the following table of values, determine the average rate of change between $x = 3$ and $x = 6$.

x	0	1	2	3	4	5	6	7	8
$f(x)$	41	37	32	30	23	20	19	14	11

a. 3 b. 19 c. $-\frac{11}{3}$ d. $-\frac{3}{11}$

e. –11

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:38 AM

28. Using the function $f(x) = 2x^2 - 5$, determine the average rate of change of the function between $x = -2$ and $x = 5$.

a. 6 b. 45 c. $\frac{1}{6}$ d. 3

e. 42

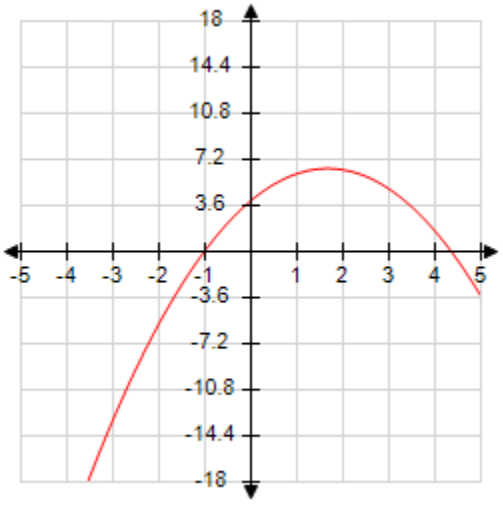
ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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29. Using the following graph, determine the average rate of change of the function between $x = -3$ and $x = 3$.

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2.4 Average Rate of Change of a Function



a. –13.1 b. 6.0 c. 18.0 d. 3.0
e. 4.9

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:42 AM

30. The distance *d* of a car traveling in a straight line is a function of the number of minutes traveled *n*. Using the data provided in the table for the car's distance and number of minutes, determine which 10-second interval of time had the highest average rate of change.

n	0	10	20	30	40	50	60	70	80
d	0	4	9	15	18	22	30	37	43

a. from 50 minutes to 60 minutes b. from 30 minutes to 40 minutes
c. from 0 minutes to 10 minutes d. from 70 minutes to 80 minutes
e. from 60 minutes to 70 minutes

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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31. The mass of bacteria (in micrograms) in a Petri dish for different times is shown in the table below. Determine the average rate of change of the bacteria from 8:30 am to 10:30 am? (Rounded to the nearest hundredths)

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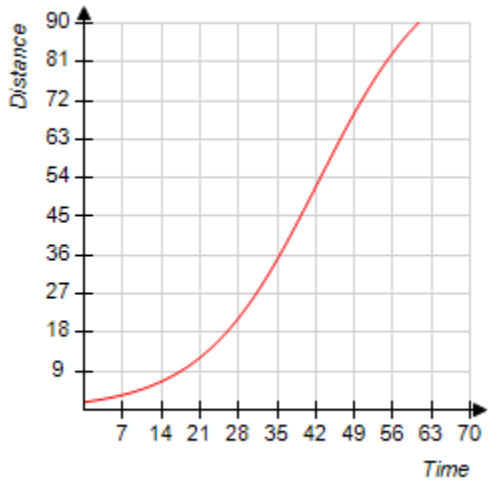
2.4 Average Rate of Change of a Function

Time (am)	Hours since 8:00 am	Mass of Bacteria (mcg)
8:00	0.0	31.32
8:30	0.5	36.00
9:00	1.0	43.11
9:30	1.5	52.25
10:00	2.0	63.57
10:30	2.5	77.29
11:00	3.0	87.60

a. 77.29 b. 2.00 c. 0.05 d. 41.29
e. 20.65

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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32. The graph below shows distance as a function of time (measured in seconds) for an Olympic swimmer racing in the 100-meter butterfly. Determine the best answer for the average speed of the swimmer for the 100-meter butterfly. (Rounded to the nearest hundredth)



a. 1.39 meters/sec b. 70 meters/sec c. 1 meters/sec
d. 0.72 meters/sec e. 100 meters/sec

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.4 Average Rate of Change of a Function

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33. A ball is thrown straight upward from a bridge and then falls all the way to the ground (past the bridge). The ball's height h (in feet) above the ground t seconds after the ball is thrown is given by $h(t) = -16t^2 + 36t + 115$. Find the average speed in the height of the ball from time $t = 1.5$ seconds to $t = 2$ seconds. (Rounded to the nearest thousandth)

a. 0.500 feet/sec b. 123.000 feet/sec c. –20.000 feet/sec
d. –0.050 feet/sec e. –10.000 feet/sec

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.5 Linear Functions and Models

1. The slope of the function $f(x) = \frac{3}{5} - \frac{2}{3}x$ is $\frac{3}{5}$.

a. True
b. False

ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:35 AM

2. The y-intercept of the function $f(x) = -1 - 9x$ is $(0, -9)$.

a. True
b. False

ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:40 AM

3. If the slope of a line is $m = \frac{8}{9}$, then the change in the run is 8.

a. True
b. False

ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 4:42 AM

4. If the slope of a line is $m = \frac{4}{5}$, then the change in the run is 5.

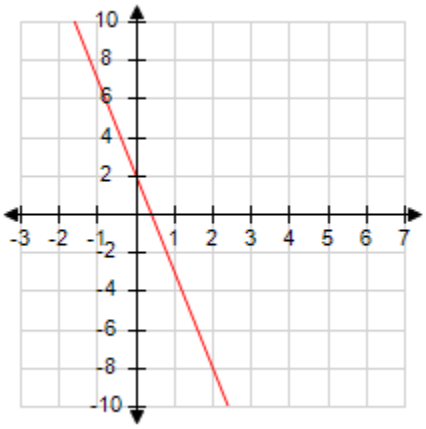
a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
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5. Given the graph below, find the rise over run between any two points.

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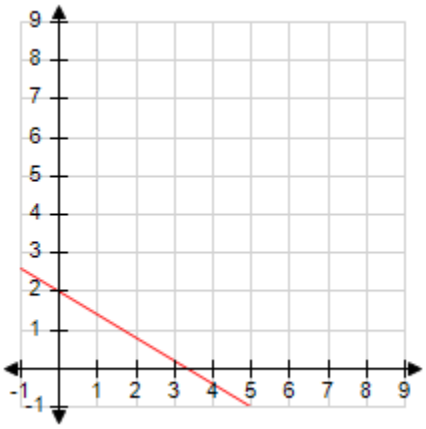


a. –5 b. 2 c. 5 d. $\frac{1}{5}$

e. $-\frac{1}{5}$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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6. Using the following graph, find the slope of the line.



a. –0.6 b. 0.6 c. 1.67 d. 2

e. –1.67

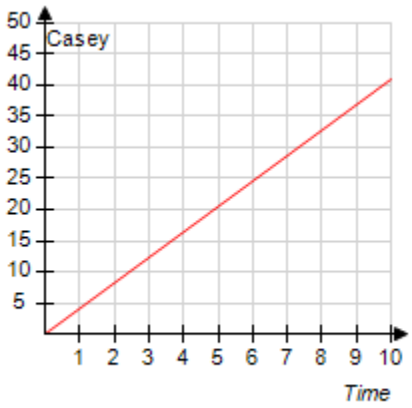
ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic

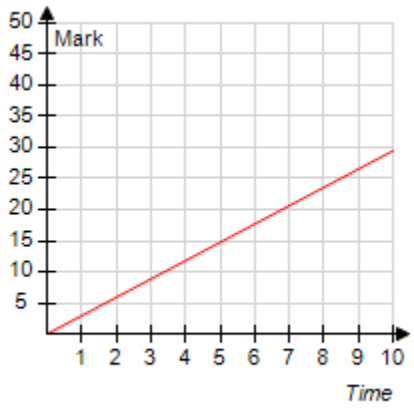
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7. Casey and Mark are running a race at constant speeds. The graph below shows the distance d (in miles) they have traveled since they started the race at time t (in minutes). Which one of the following statements is true?





a. Not enough information
b. Mark is running faster than Casey.
c. Casey is running at 0.24 mph, while Mark is running at 0.34 mph.
d. Casey is running at 4.1 mph, while Mark is running at 2.95 mph.
e. Casey and Mark are both traveling at the same constant speed.

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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8. A water tank is being drained at the rate of 17 gal/min. The tank started with 17750 gallons of water. Which of the following linear functions model the number of gallons of water in the tank at any time t.

a. $g(t) = 17 + 17750t$ b. $g(t) = -17t$
c. $g(t) = 17 - 17750t$ d. $g(t) = 17750 - 17t$
e. $g(t) = 17750 + 17t$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.5 Linear Functions and Models

9. A beanstalk grows at a constant rate. The beanstalk's height (inches) as a function of time (days) is modeled by $h(t) = 6 + 0.75t$. What is the beanstalk's initial height?

a. 6.75 inches b. 6 inches c. 0.75 inches
d. 0 inches e. Not enough information

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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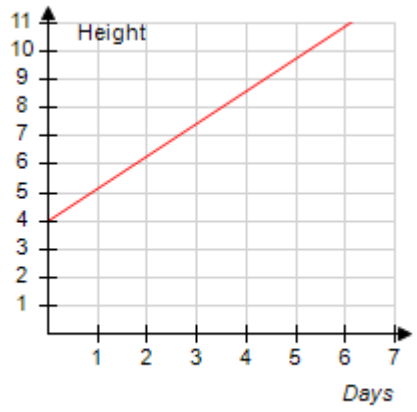
10. A beanstalk grows at a constant rate. The beanstalk's height (inches) as a function of time (days) is modeled by $h(t) = 3 + 0.2t$. At what rate is the beanstalk growing?

a. 3 inches/day b. 0.2 inches/day
c. 3.2 inches/day d. Not enough information
e. 1 inch/day

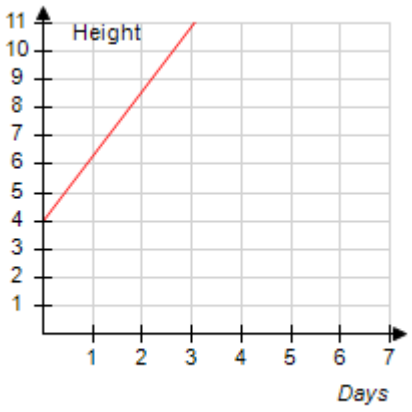
ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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11. A beanstalk grows at a constant rate. The beanstalk's height (inches) as a function of time (days) is modeled by $h(t) = 4 + 1.15t$. Which of the following graphs illustrate the function h?

a.



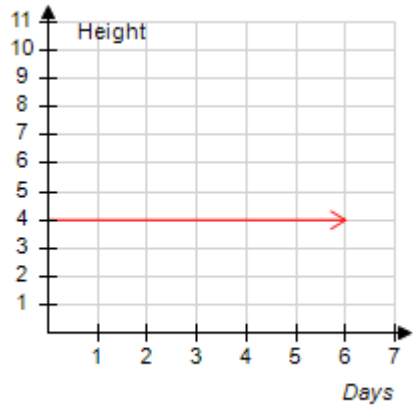
b.



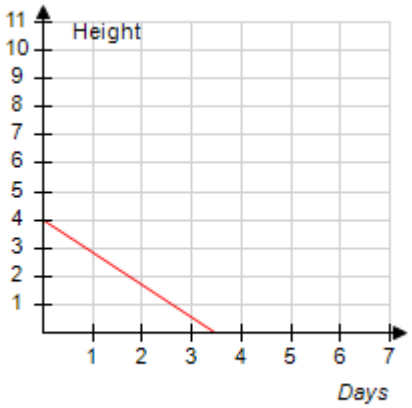
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c.



d.



e. None of these options

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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12. Which of the following functions are linear? Check all functions that apply.

a. $g(x) = 4x^2 - 4$ b. $h(x) = \frac{9-8x}{8}$ c. $j(x) = \frac{6}{x}$

d. $k(x) = -5$ e. $f(x) = 1 - 6x$

ANSWER: b, d, e
POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True
DATE CREATED: 6/11/2014 8:13 AM
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13. Casey and Mark are running a race at constant speeds. After 13 minutes, Casey has traveled 1.35 miles. After 16 minutes, Mark has traveled 1.6 miles. Which of the following statements are true? Check all statements that apply.

a. Casey's average speed is 8.67 mph.
b. Casey is running faster than Mark.
c. Mark's average speed is 6.00 mph.
d. Casey and Mark are both running at the same constant speed.
e. Mark will eventually catch up to Casey if they both continue to run at their constant speed.

ANSWER: b, c
POINTS: 1
QUESTION TYPE: Multiple Response
HAS VARIABLES: True

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2.5 Linear Functions and Models

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2.6 Transformations of Funcs

1. Suppose the graph of f is given. Describe how the graph of the function can be obtained from the graph of f.

$y = f(-x)$

a. Reflect the graph of $y = f(x)$ about the x-axis and stretch vertically by a factor of 6.

b. Reflect the graph of $y = f(x)$ about the y-axis.

c. Reflect the graph of $y = f(x)$ about the x-axis.

d. Reflect the graph of $y = f(x)$ about the x-axis, and then shift upward 3 units.

e. Reflect the graph of $y = f(x)$ about the y-axis and stretch vertically by a factor of 3.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 7:11 AM

2. Suppose the graph of f is given. Describe how the graph of the function can be obtained from the graph of f.

$y = 7f(x) - 3$

a. Stretch the graph of $y = f(x)$ vertically by a factor of 3, and then shift downward 7 units.

b. Reflect the graph of $y = f(x)$ about the y-axis, and then shift downward 3 units.

c. Stretch the graph of $y = f(x)$ vertically by a factor of 7, and then shift downward 3 units.

d. Stretch the graph of $y = f(x)$ vertically by a factor of 7, and then shift upward 3 units.

e. Stretch the graph of $y = f(x)$ vertically by a factor of 3, and then shift upward 7 units.

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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3. Suppose the graph of f is given. Describe how the graph of the function can be obtained from the graph of f.

$y = 4f(x + 5) - 3$

a. Shift the graph of $y = f(x)$ to the right 4 units, stretch vertically by a factor of 5, and then shift downward 3 units.

b. Shift the graph of $y = f(x)$ to the left 4 units, stretch vertically by a factor of 5, and then shift downward 3 units.

c. Shift the graph of $y = f(x)$ to the right 5 units, stretch vertically by a factor of 4, and then shift downward 3 units.

d. Shift the graph of $y = f(x)$ to the left 5 units, stretch vertically by a factor of 4, and then shift upward 3 units.

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e. Shift the graph of $y = f(x)$ to the left 5 units, stretch vertically by a factor of 4, and then shift downward 3 units.

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 7:18 AM

4. Explain how the graphs of *g* and *h* are obtained from the graph of *f*.

$f(x) = x^2,\ g(x) = (x+4)^2,\ h(x) = x^2 + 4$

a. The graph of *g* is obtained from the graph of *f* by shifting left 2 units, and the graph of *h* is obtained from the graph of *f* by moving up 2 units.
b. The graph of *g* is obtained from the graph of *f* by shifting left 4 units, and the graph of *h* is obtained from the graph of *f* by moving up 4 units.
c. The graph of *g* is obtained from the graph of *f* by shifting left 5 units, and the graph of *h* is obtained from the graph of *f* by moving up 5 units.
d. The graph of *g* is obtained from the graph of *f* by moving up 4 units, and the graph of *h* is obtained from the graph of *f* by shifting left 4 units.
e. The graph of *g* is obtained from the graph of *f* shifting right 4 units, and the graph of *h* is obtained from the graph of *f* moving up 4 units.

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.04.23m
DATE CREATED: 6/11/2014 8:13 AM
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5. Explain how the graph of *g* is obtained from the graph of *f*.

$f(x) = x^2,\ g(x) = x^2 + 2$

a. The graph of $g(x) = x^2 + 2$ is obtained by shifting the graph of $f(x)$ downward 2 units.
b. The graph of $g(x) = x^2 + 2$ is obtained by stretching the graph of $f(x)$ vertically by a factor of 2.
c. The graph of $g(x) = x^2 + 2$ is obtained by shifting the graph of $f(x)$ to the right 2 units.
d. The graph of $g(x) = x^2 + 2$ is obtained by shifting the graph of $f(x)$ to the left 2 units.
e. The graph of $g(x) = x^2 + 2$ is obtained by shifting the graph of $f(x)$ upward 2 units.

ANSWER: e

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2.6 Transformations of Funcs

POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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6. Explain how the graph of g is obtained from the graph of f.

$f(x) = \sqrt{x}, g(x) = \frac{1}{2}\sqrt{x-5}$

a. The graph of $g(x) = \frac{1}{2}\sqrt{x-5}$ is obtained by shifting the graph of $f(x) = \sqrt{x}$ upward 5 units, and then shrinking the graph vertically by a factor of $\frac{1}{2}$.

b. The graph of $g(x) = \frac{1}{2}\sqrt{x-5}$ is obtained by shifting the graph of $f(x) = \sqrt{x}$ to the left 5 units, and then shrinking the graph vertically by a factor of $\frac{1}{2}$.

c. The graph of $g(x) = \frac{1}{2}\sqrt{x-5}$ is obtained by shifting the graph of $f(x) = \sqrt{x}$ to the right 5 units.

d. The graph of $g(x) = \frac{1}{2}\sqrt{x-5}$ is obtained by shifting the graph of $f(x) = \sqrt{x}$ downward 5 units.

e. The graph of $g(x) = \frac{1}{2}\sqrt{x-5}$ is obtained by shifting the graph of $f(x) = \sqrt{x}$ to the right 5 units, and then shrinking the graph vertically by a factor of $\frac{1}{2}$.

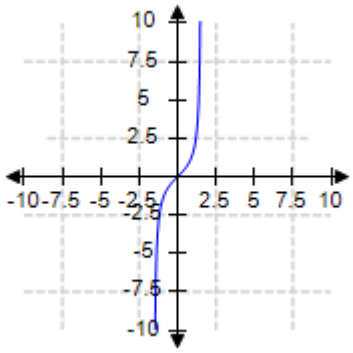
ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:33 AM

7. Sketch the function $g(x) = |x^2|$.

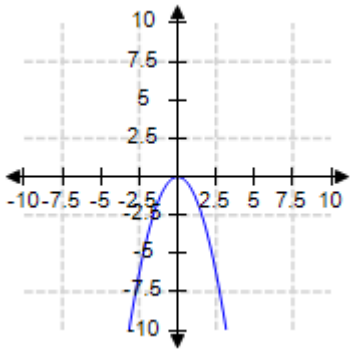
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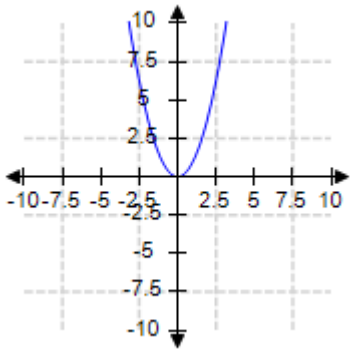
a.



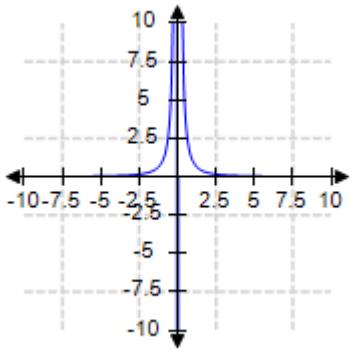
b.



c.



d.



e. none of these

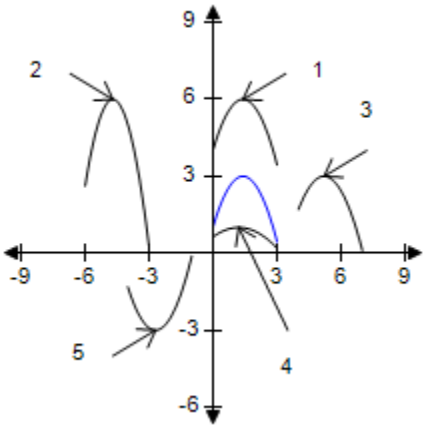
ANSWER:	c
POINTS:	1
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
OTHER:	srca.03.04.64m
DATE CREATED:	6/11/2014 8:13 AM
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8. The graph of $y = h(r)$ is given in the dotted graph.

Determine the number of the graph of the function $2h\,(r + 6)$.

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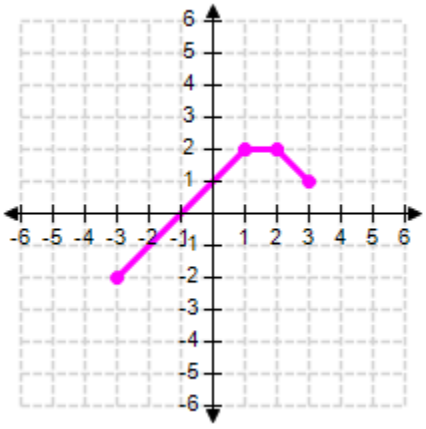


a. 1
b. 3
c. 2
d. 4
e. 5

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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9. The graph of g is given. Sketch the graph of the function.

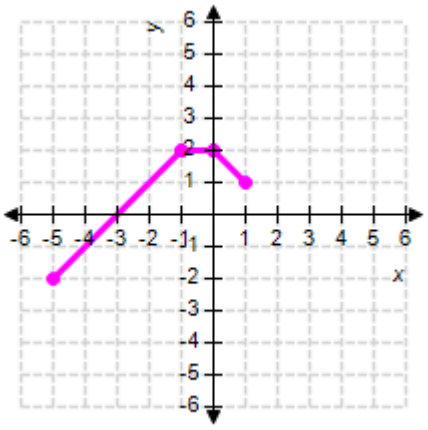
$y = g(x) - 2$



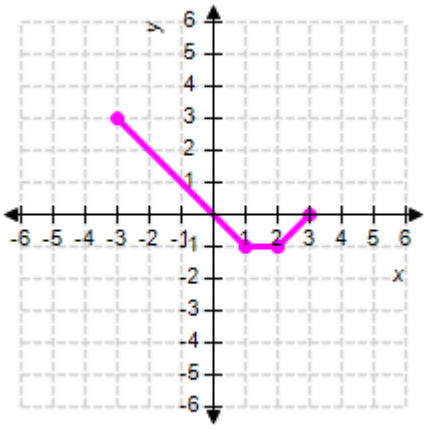
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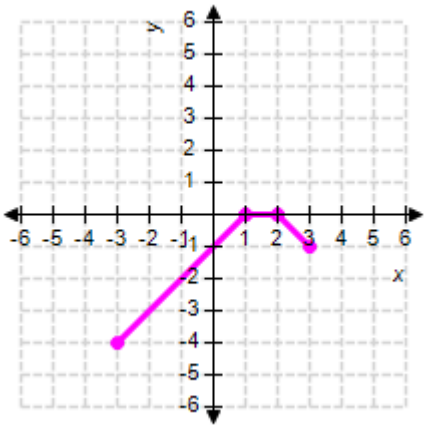
a.



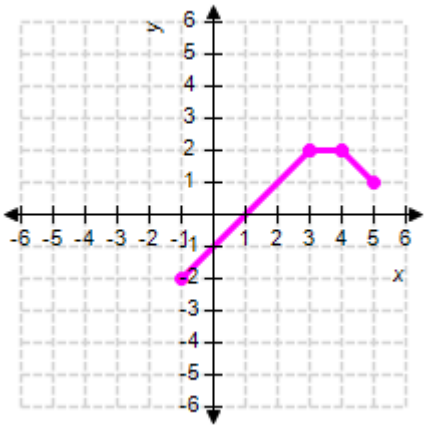
b.



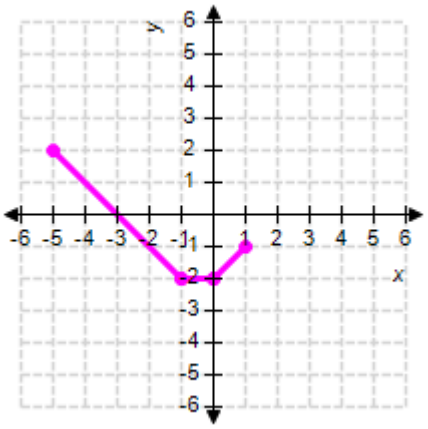
c.



d.



e.

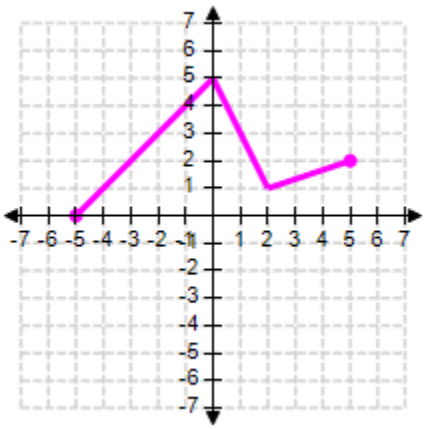


ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
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STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/25/2014 4:08 AM

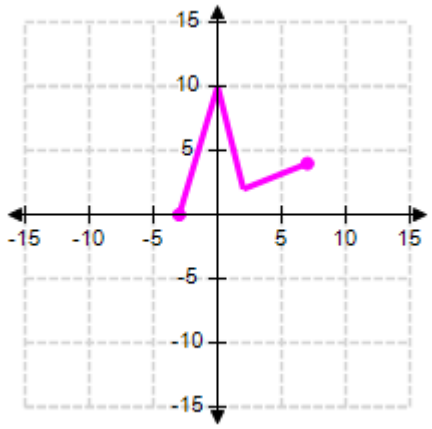
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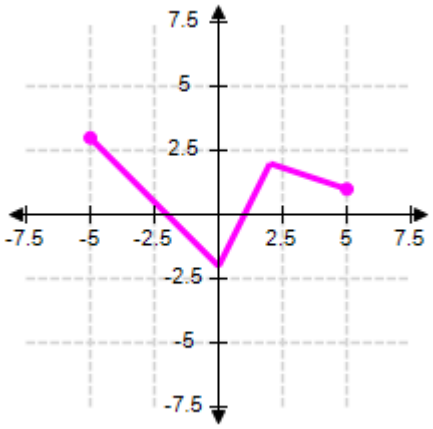
10. The graph of f is given. Sketch the graph of the function $y = -f(x) + 3$.



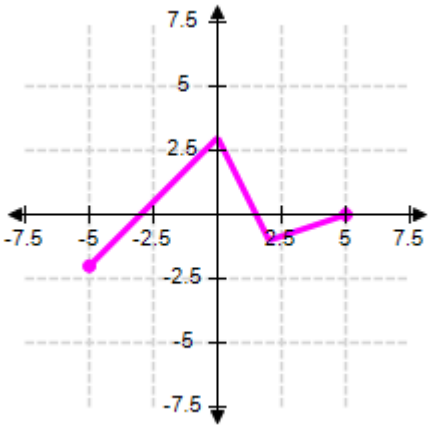
a.



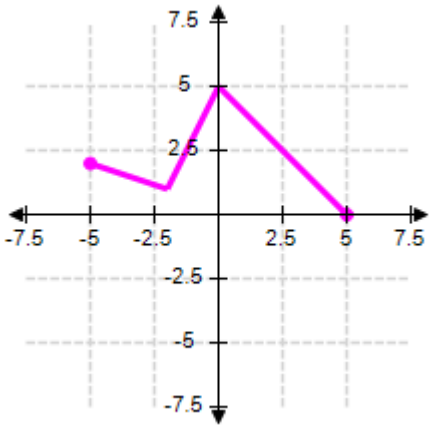
b.



c.



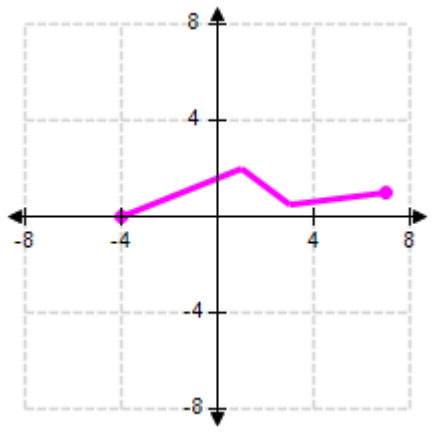
d.



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e.



ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:38 AM

11. To obtain the graph of the function $g(x) = (x + 8)^2$, we shift the graph of the function $f(x) = x^2$ to the _____ (*left* or *right*) 8 units.
ANSWER: right
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.04.25
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:11 AM

12. Suppose the graph of f is given.

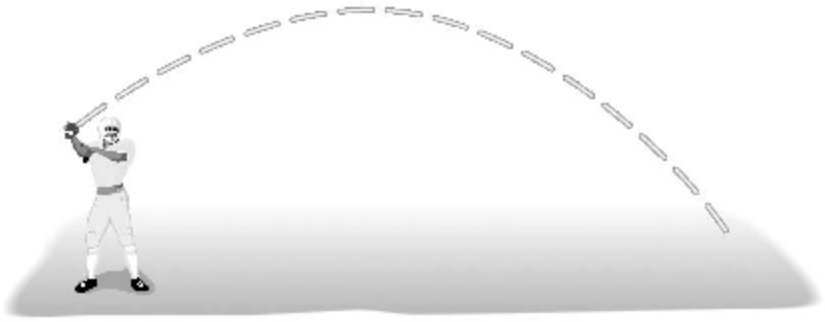
To obtain the graph of $y = f(x - 7)$, we must shift the graph of $f(x)$ _____ (*left* or *right*) 7 units.
ANSWER: left
POINTS: 1
QUESTION TYPE: Completion
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.04.01
DATE CREATED: 6/11/2014 8:13 AM
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13. A ball is thrown across a playing field. Its path is given by the equation $y = -0.005x^2 + x + 5$, where x is the

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distance the ball has traveled horizontally, and y is its height above ground level, both measured in feet.



(a) What is the maximum height attained by the ball?

_____ ft

(b) How far has it traveled horizontally when it hits the ground? Please round your answer to the nearest tenth.

_____ ft

ANSWER: 55; 204.9
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 7:39 AM

14. A manufacturer finds that the revenue generated by selling x units of a certain commodity is given by the function $R(x) = 60x - 0.4x^2$, where the revenue $R(x)$ is measured in dollars.

(a) What is the maximum revenue?

(b) How many units should be manufactured to obtain this maximum?

_____ units

ANSWER: $2,250; 75
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:49 AM

15. When a certain drug is taken orally, the concentration of the drug in the patient's bloodstream after t minutes is given by $C(t) = 0.08t - 0.0004t^2$, where $0 \le t \le 240$ and the concentration is measured in mg/L.

(a) When is the maximum serum concentration reached?

after _____ minutes

(b) What is that maximum concentration?

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_____ mg/L

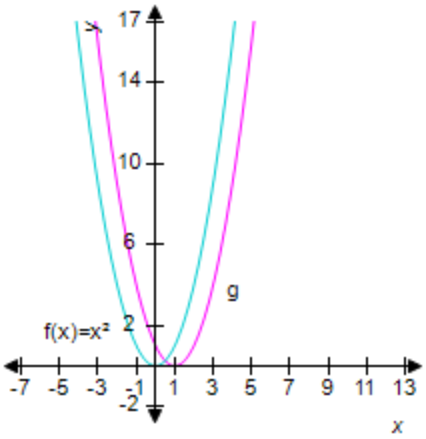
ANSWER: 100; 4
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:02 AM

16. Find a function whose graph is a parabola with vertex (3, 1) and that passes through the point (4, –5).

ANSWER: $y = -6x^2 + 36x - 53$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/16/2014 7:49 AM

17. The graphs of *f* and *g* are given. Find a formula for the function *g*.



ANSWER: $g(x) = x^2 - 2x + 1$

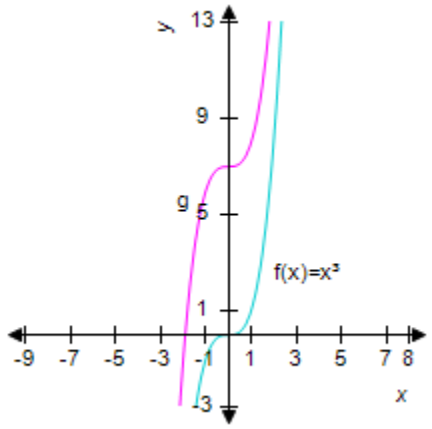
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/25/2014 3:56 AM

18. The graphs of *f* and *g* are given. Find a formula for the function *g*.

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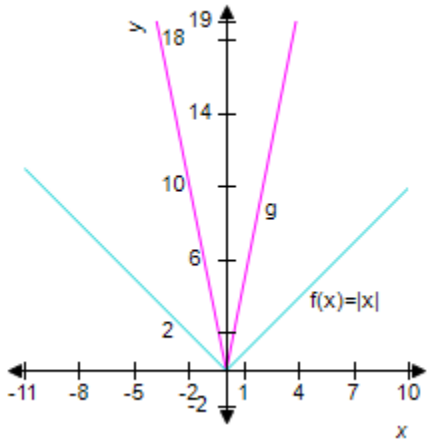
2.6 Transformations of Funcs



ANSWER: $g(x) = x^3 + 7$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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19. The graphs of f and g are given. Find a formula for the function g.



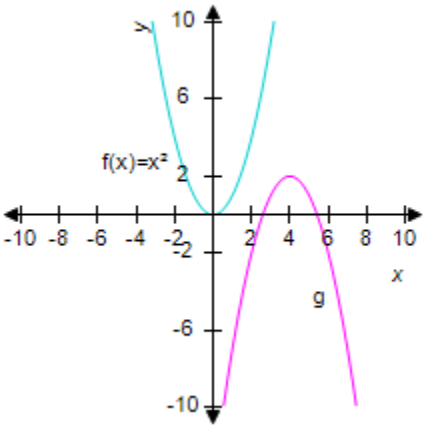
ANSWER: $g(x) = 5|x|$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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20. The graphs of f and g are given. Find a formula for the function g.

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ANSWER: $g(x) = -x^2 + 8x - 14$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/25/2014 4:26 AM

21. Is the function $f(x) = 6x^6 + 2x + 7$ *even*, *odd*, or *neither*?

ANSWER: neither
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.04.58
DATE CREATED: 6/11/2014 8:13 AM
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22. The graph of $f(x-2)$ is obtained from the graph of $y = f(x)$ by shifting the graph left 2 units.

a. True
b. False

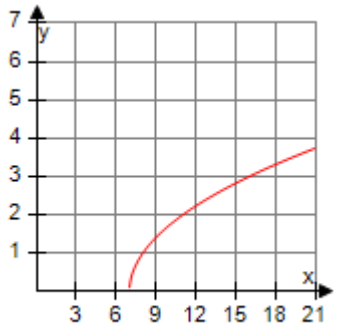
ANSWER: False
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:12 AM

23. Which one of the following graphs illustrate the function $f(x) = \sqrt{x-7}$?

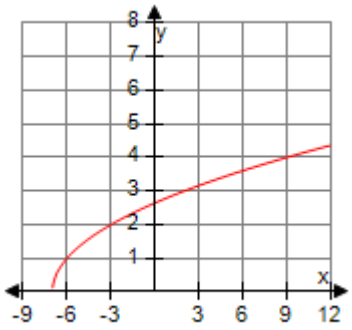
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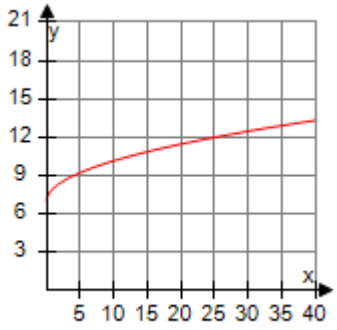
a.



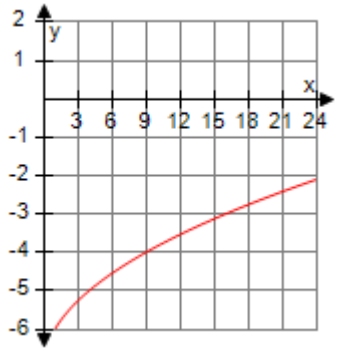
b.



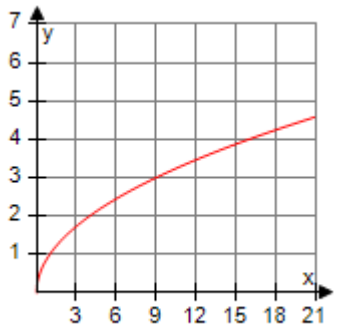
c.



d.



e.



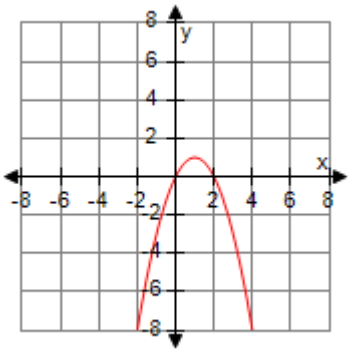
ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 5:13 AM

24. Which one of the following graphs illustrate the function $f(x) = -(x+1)^2 + 1$?

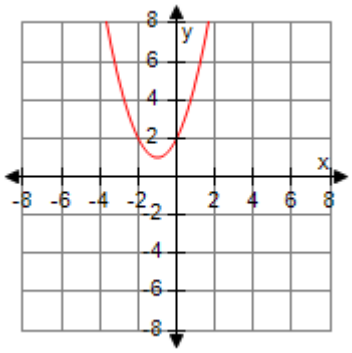
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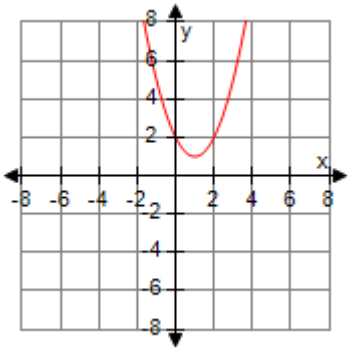
a.



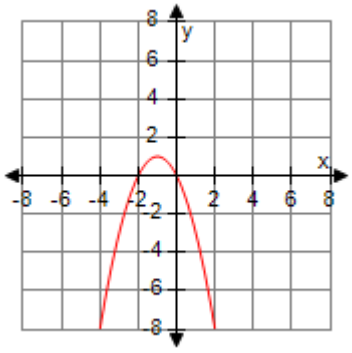
b.



c.



d.

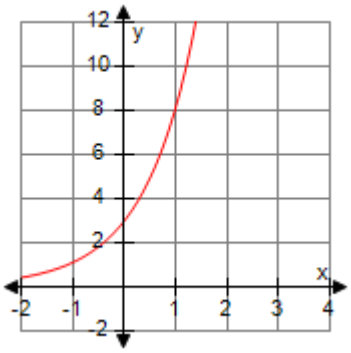


e. None of these options

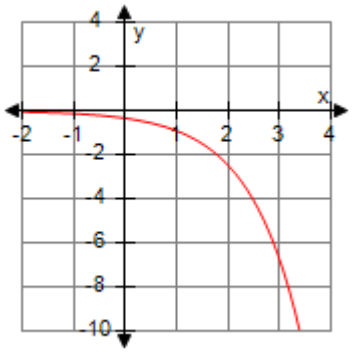
ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 5:14 AM

25. Which one of the following graphs illustrate the function $f(x) = \frac{1}{3}e^x$?

a.



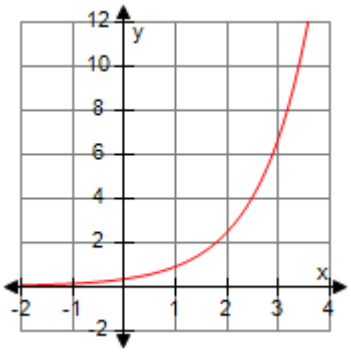
b.



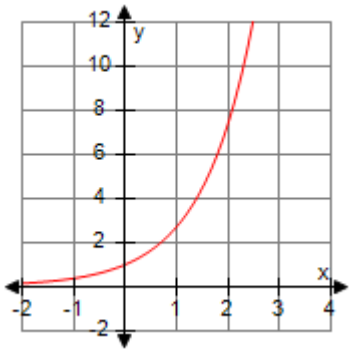
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c.



d.

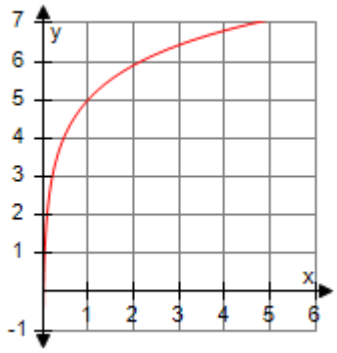


e. None of these options

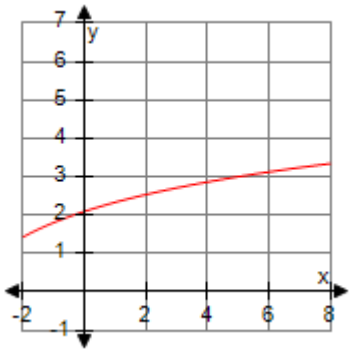
ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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26. Which one of the following graphs illustrate the function $f(x) = 3\log x + 5$?

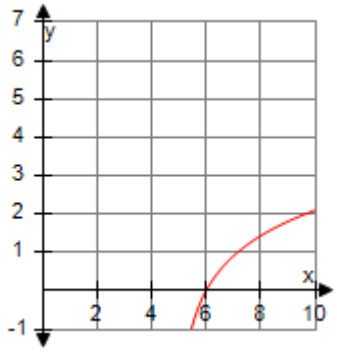
a.



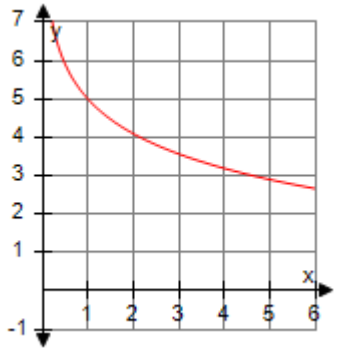
b.



c.



d.



e. None of these options

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)

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2.6 Transformations of Funcs

HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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27. Which one of the following functions translates the graph of $f(x) = |x|$ to a new graph g with a vertical shift down 9 units and a horizontal shift left 6 units.

a. $g(x) = |x - 9| + 6$ b. $g(x) = |x + 9| - 6$ c. $g(x) = |x + 6| + 9$
d. $g(x) = |x - 6| + 9$ e. $g(x) = |x + 6| - 9$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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28. Which one of the following functions translates the graph of $f(x) = 4^x$ to a new graph g with a reflection about the x-axis, a vertical stretch by a factor of 5, and a horizontal shift left 8 units.

a. $f(x) = -5 \cdot 4^{x-8}$ b. $f(x) = -5 \cdot 4^x + 8$ c. $f(x) = 5 \cdot 4^{x-8}$
d. $f(x) = -5 \cdot 4^{x+8}$ e. $f(x) = 5 \cdot 4^{x+8}$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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29. A function f is given by the table. Find $f(0) - 4$.

x	–4	–2	0	2
$f(x)$	5	8	–1	1

a. –1 b. –5 c. 4 d. –4
e. 0

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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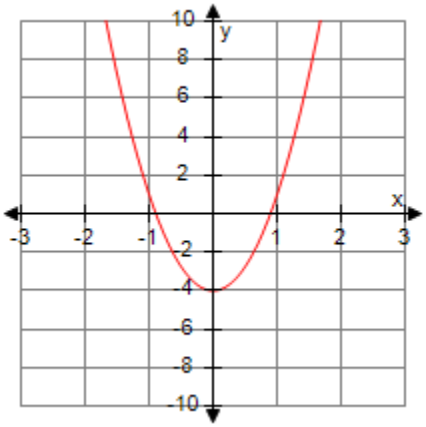
30. A function f is given by the table. Find $f(x-2)$ when $x=-2$.

x	-4	-2	0	2
$f(x)$	6	8	-2	1

a. 6 b. –4 c. 8 d. 0
e. –2

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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31. The graph of g is given below and represents a translation of the graph of $f(x)=x^2$. Which one of the functions best describes the graph of g.



a. $y=5x^2+4$ b. $y=5x^2-4$ c. $y=\frac{1}{5}x^2-4$

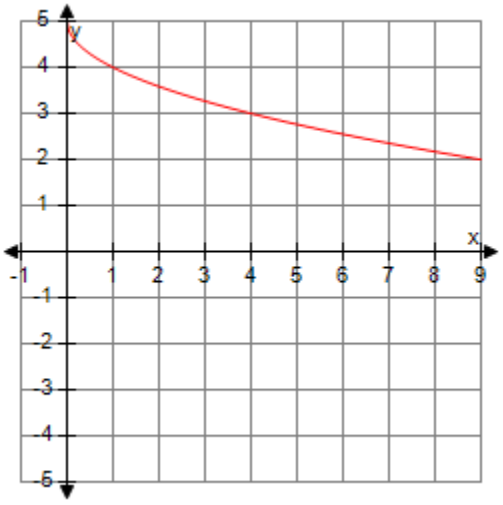
d. $y=-5x^2-4$ e. $y=\frac{1}{5}x^2+4$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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32. The graph of g is given below and represents a transformation of the graph of $f(x)=\sqrt{x}$. Which one of the functions best describes the graph of g.

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a. $f(x) = -\sqrt{x+5}$ b. $f(x) = -\sqrt{x+5}$ c. $f(x) = -\sqrt{x}+5$

d. $f(x) = -\sqrt{x}+5$ e. $f(x) = \sqrt{x}+5$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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33. If $S(n)$ represents John's salary per month (in thousands of dollars) after working n number of months at a certain job, which one of the following would describe the meaning of $S(n+1)$?

a. John's salary after working $n+1$ months at the job.
b. John's raise of $1 per month.
c. John's salary after working 1 months at the job.
d. Not enough information.
e. John's total number of months working at the job.

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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34. If $d(t)$ represents Mark's driving distance (in miles) after t minutes on the road, which one of the following would describe the meaning of $d(t) + 9$?

a. Not enough information.

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b. Mark's driving distance plus an additional 9 miles.
c. Mark's driving distance after traveling for 9 minutes.
d. Mark's driving distance while traveling $t + 9$ miles per minute.
e. Mark's time driving on the road is $t + 9$ minutes.

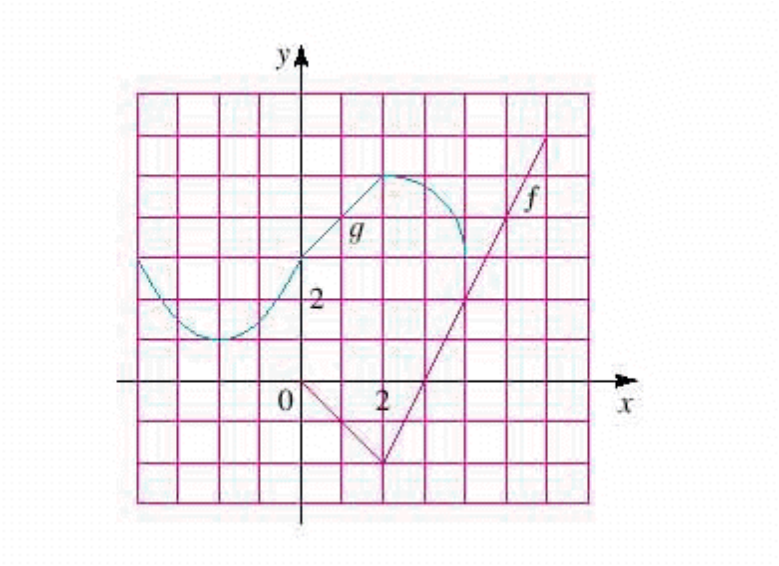
ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.7 Combining Functions

1. Use the given graphs of f and g to evaluate $g(f(5))$.



a. 3
b. 9
c. 5
d. 4
e. 2

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.24m
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2. Find the domain of $g \circ f$, if $f(x) = x^2$ and $g(x) = \sqrt{x-6}$.

a. $x \geq \sqrt{6}$
b. $(-\infty, -6) \cup (6, \infty)$
c. $(-\infty, -6] \cup [6, \infty)$
d. $\left(-\infty, -\sqrt{6}\right) \cup \left(\sqrt{6}, \infty\right)$
e. $x \geq 6$
f. $\left(-\infty, -\sqrt{6}\right] \cup \left[\sqrt{6}, \infty\right)$

ANSWER: f
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True

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2.7 Combining Functions

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3. For $f(x)=x^4+1$, $g(x)=x-2$, and $h(x)=\sqrt{x}$.

Find $f \circ g \circ h$.

a. $(f \circ g \circ h)(x)=\left(x^4+1\right)(x-2)\sqrt{x}$

b. $(f \circ g \circ h)(x)=\sqrt{x^4-1}$

c. $(f \circ g \circ h)(x)=\left(\sqrt{x}-1\right)^4$

d. $(f \circ g \circ h)(x)=x^4+x-1+\sqrt{x}$

e. $(f \circ g \circ h)(x)=\left(\sqrt{x}-2\right)^4+1$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.43m
DATE CREATED: 6/11/2014 8:13 AM
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4. Express the function in the form $f \circ g$.

$$G(x)=\frac{x^3}{x^3+2}$$

a. $f(x)=x^3$, $g(x)=\dfrac{x}{x-2}$

b. $f(x)=x^3$, $g(x)=\dfrac{x}{x+2}$

c. $f(x)=\dfrac{x}{x+2}$, $g(x)=x^3$

d. $f(x)=x^3+2$, $g(x)=\dfrac{x}{x+2}$

e. $f(x)=\dfrac{x}{x-2}$, $g(x)=x^3$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False

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2.7 Combining Functions

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5. Express the function in the form $f \circ g$.

$H(x) = \sqrt{4 + \sqrt{x}}$

a. $f(x) = \sqrt{x}, g(x) = \sqrt{4 + x}$

b. $f(x) = \sqrt{4 + x}, g(x) = \sqrt{x}$

c. $f(x) = \sqrt{4 - x}, g(x) = x^2$

d. $f(x) = \sqrt{x}, g(x) = \sqrt{4 - x}$

e. $f(x) = \sqrt{x - 4}, g(x) = \sqrt{x}$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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6. Express the function in the form $f \circ g \circ h$.

$G(x) = \dfrac{4}{\left(7 + \sqrt{x}\right)^6}$

a. $f(x) = \dfrac{4}{x^6}, g(x) = 7 + x, h(x) = \sqrt{x}$

b. $f(x) = \sqrt{x}, g(x) = \dfrac{4}{x^6}, h(x) = 7 + x$

c. $f(x) = 7 + x, g(x) = \sqrt{x}, h(x) = \dfrac{4}{x^6}$

d. $f(x) = 7 + x, g(x) = \dfrac{4}{x^6}, h(x) = \sqrt{x}$

e. $f(x) = \dfrac{4}{x^6}, g(x) = \sqrt{x}, h(x) = 7 + x$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic

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2.7 Combining Functions

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7. You have a $10 coupon from the manufacturer good for the purchase of a cell phone. The store where you are purchasing your cell phone is offering a 40% discount on all cell phones. Let x represent the regular price of the cell phone.

Suppose only the 40% discount applies. Let a function f model the purchase price of the cell phone as a function of the regular price x. Suppose only the $10 coupon applies. Let a function g model the purchase price of the cell phone as a function of the sticker price x. If you can use the coupon and the discount, then the purchase price is either $f \circ g(x) = A$ or $g \circ f(x) = B$ depending on the order in which they are applied to the price.

Find A and B.

a. $A = \frac{3}{5}x - 8$ and $B = \frac{3}{5}x - 8$

b. $A = \frac{3}{5}x - 10$ and $A = \frac{3}{5}x - 6$

c. $A = \frac{3}{5}x - 5$ and $B = \frac{3}{5}x - 5$

d. $A = \frac{3}{5}x - 3$ and $B = \frac{3}{5}x - 13$

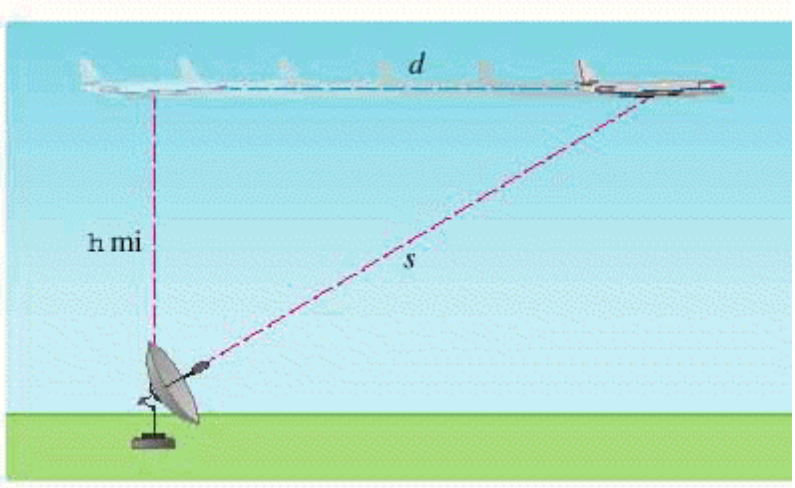
e. $A = \frac{3}{5}x - 6$ and $B = \frac{3}{5}x - 10$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.58m
DATE CREATED: 6/11/2014 8:13 AM
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8. An airplane is flying at a speed of 250 mph at an altitude of 5 miles. The plane passes directly above a radar station at time $t = 0$.

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Find the distance s between the plane and the radar station after 5 minutes.

a. 22.4 miles
b. 21.9 miles
c. 20.9 miles
d. 23.8 miles
e. 21.4 miles

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.60m
DATE CREATED: 6/11/2014 8:13 AM
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9. Suppose that $g(x) = 4x + 4$ and $h(x) = 16x^2 + 32x + 25$.

Find a function f, such that $f(g(x)) = h(x)$. (Think about what operations you would have to perform on the formula for g to end up with the formula for h.)

a. $f(x) = x^2 + 9$
b. $f(x) = x^2 + 25$
c. $f(x) = x^2 + 13$
d. $f(x) = 4x^2 + 8x + 5$
e. $f(x) = (x + 9)^2$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic

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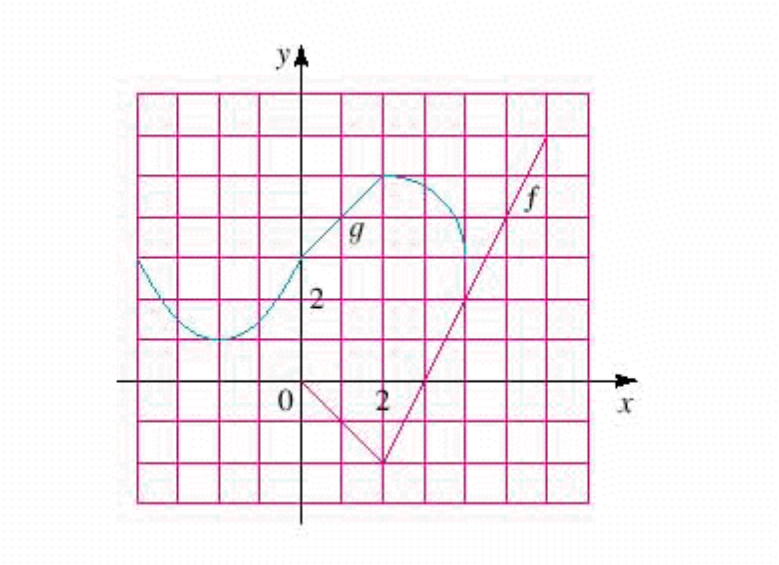
2.7 Combining Functions

OTHER: srca.03.06.63m
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10. Use $f(x) = 4x - 4$ and $g(x) = 5 - x^2$ to evaluate the expression $(g \circ f)(3)$.

$(g \circ f)(3) =$ _____
ANSWER: –59
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.06.19
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11. Use the given graphs of *f* and *g* to evaluate the expression $(f \circ g)(0)$.



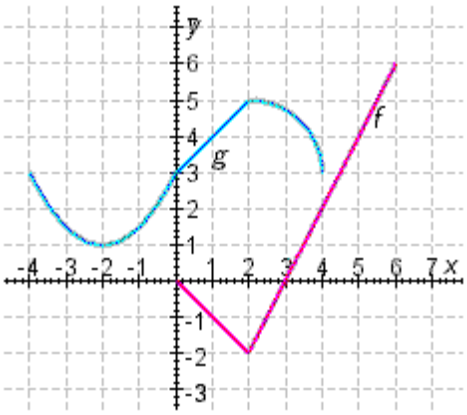
$(f \circ g)(0) =$ _____
ANSWER: 0
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: True
OTHER: srca.03.06.23
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12. Use the given graphs of *f* and *g* to evaluate the expression.

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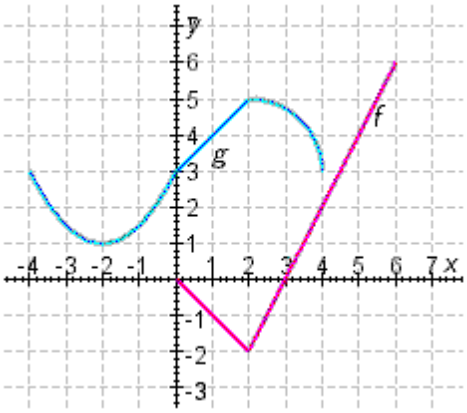
2.7 Combining Functions



$(g \circ f)(3) =$ _____

ANSWER: 3
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: False
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13. Use the given graphs of f and g to evaluate the expression.



$(g \circ g)(-2) =$ _____

ANSWER: 4
POINTS: 1
QUESTION TYPE: Numeric Response
HAS VARIABLES: False
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14. Find the domain of $f \circ g$ if

$f(x) = \sqrt[7]{x-7}$ and $g(x) = \sqrt[8]{x-7}$.

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ANSWER: $[7, \infty)$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.39
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15. Find the domain of the function.

$f(x) = \sqrt{x} + \sqrt{8 - x}$

ANSWER: [0, 8]
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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16. Find the domain of the function.

$f(x) = \dfrac{\sqrt{x+6}}{x-2}$

ANSWER: $[-6, 2) \cup (2, \infty)$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.10
DATE CREATED: 6/11/2014 8:13 AM
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17. Find the domain of the function.

$f(x) = \dfrac{\sqrt{x+3}}{x-8}$

ANSWER: $[-3, 8) \cup (8, \infty)$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.10

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2.7 Combining Functions

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18. Use $f(x) = 2x - 5$ and $g(x) = 12 - x^2$ to evaluate the expression.

(a) $(f \circ f)(-1) =$ _____

(b) $(g \circ g)(4) =$ _____

ANSWER: –19; –4
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/30/2014 3:22 AM

19. $f(x) = x - 9$ and $g(x) = |x + 8|$.

Find $g(f(x))$.
ANSWER: $|x - 1|$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.36
DATE CREATED: 6/11/2014 8:13 AM
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20. Find $f \circ g \circ h$.

$f(x) = \frac{5}{x}, g(x) = x^3, h(x) = x^2 + 4$

ANSWER: $f(g(h(x))) = \frac{5}{x^6 + 12x^4 + 48x^2 + 64}$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 7/30/2014 3:18 AM

21. Find $f \circ g \circ h$.

$f(x) = \sqrt{x}, g(x) = \frac{x}{x - 2}, h(x) = \sqrt[8]{x}$

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2.7 Combining Functions

ANSWER: $f(g(h(x))) = \sqrt{\dfrac{\sqrt[8]{x}}{\sqrt[8]{x}-2}}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
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22. Express the function $F(x) = (x-9)^7$ in the form $f \circ g$.

ANSWER: $x^7, x-9$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.45
DATE CREATED: 6/11/2014 8:13 AM
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23. Express the function $F(x) = \dfrac{5}{x+8}$ in the form $f \circ g$.

ANSWER: $5x, \dfrac{1}{(x+8)}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.48
DATE CREATED: 6/11/2014 8:13 AM
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24. Express the function $F(x) = (10 - \sqrt{x})^5$ in the form $f \circ g \circ h$.

ANSWER: $x^5, 10-x, \sqrt{x}$

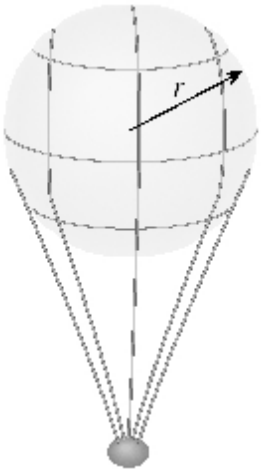
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.53
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2.7 Combining Functions

25. A spherical weather balloon is being inflated. The radius of the balloon is increasing at the rate of 9 cm/s. Express the surface area of the balloon as a function of time t (in seconds).



ANSWER: $S(t) = 324\pi \cdot t^2$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
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26. A savings account earns 4% interest compounded annually. If you invest x dollars in such an account, then the amount $A(x)$ of the investment after one year is the initial investment plus 4%; that is,

$A(x) = x + 0.04x = 1.04x$

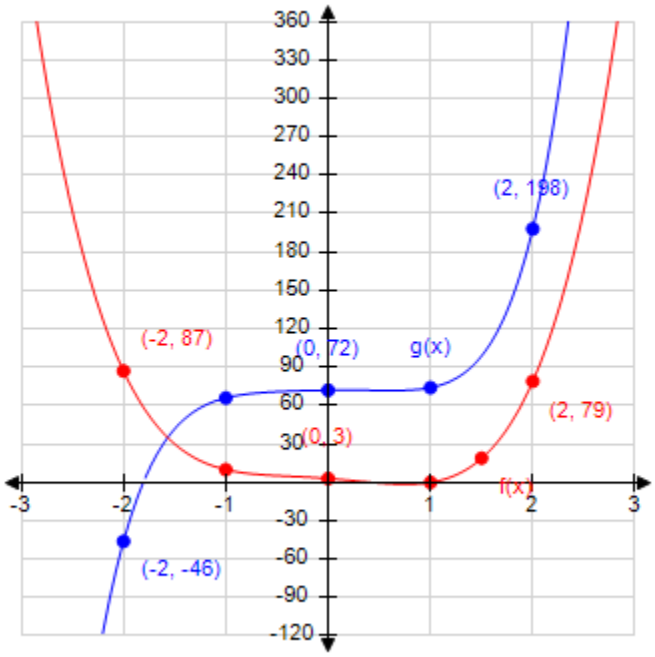
$A \circ A$ represents the amount of the investment after two years. Find a formula for what you get when you compose 5 copies of A.

$A \circ A =$ _____
ANSWER: $1.22x$
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.06.61
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27. Use the graph below to find an approximation of $(f + g)(2)$.

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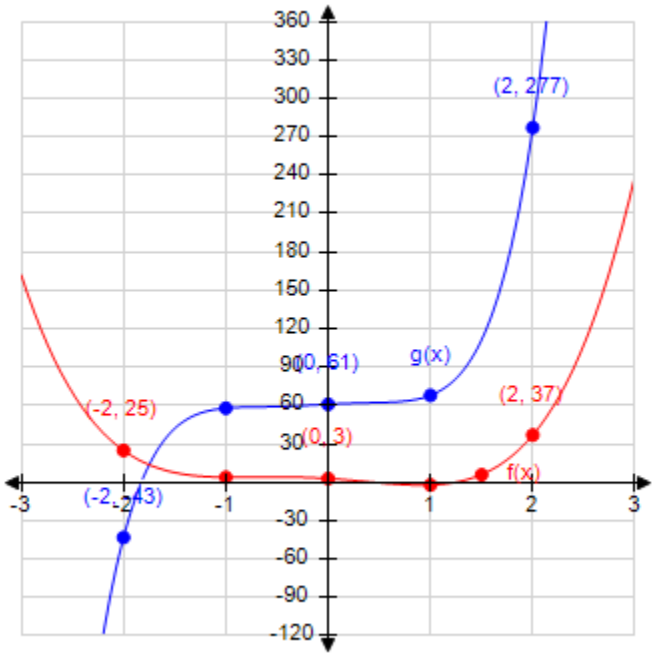
a. 198 b. 277 c. 2 d. 79
e. –119

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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28. Use the graph below to find $(f - g)(2)$.

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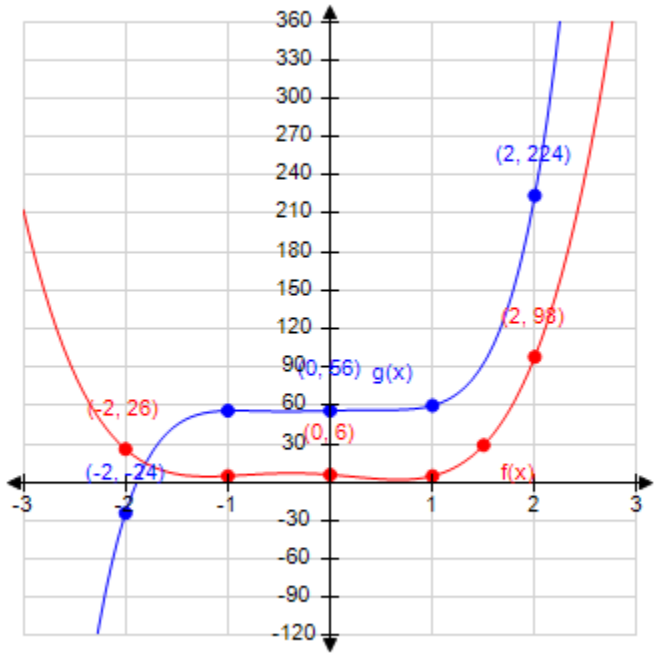
a. 277 b. –240 c. 2 d. 37
e. 314

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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29. Use the graph below to find $(fg)(2)$.

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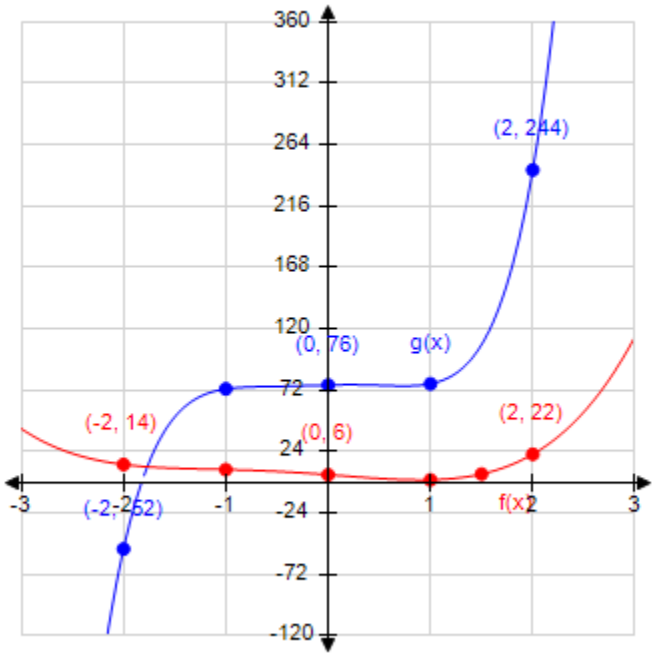
a. 2 b. 98 c. 2.3 d. 21,952
e. 224

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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30. Use the graph below to find $(g/f)(-2)$.

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a. –52 b. –38.0 c. 14 d. –2
e. –3.7

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 7:07 AM

31. Use the table below to find $(f + g)(-1)$.

t	-3	-1	1	3
$f(t)$	12	8	–18	9
$g(t)$	–2	–7	–14	–9

a. –56 b. 10 c. 15 d. 1
e. –32

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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32. Use the table below to find $(f - g)(-3)$.

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t	-3	-1	1	3
$f(t)$	10	–1	19	–3
$g(t)$	–6	4	–11	–9

a. –60 b. –5 c. –48 d. –16
e. 16

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 6:02 AM

33. Use the table below to find $(fg)(3)$.

t	-3	-1	1	3
$f(t)$	12	1	4	–6
$g(t)$	–8	7	17	–10

a. –96 b. 60 c. 180 d. 4
e. –16

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 6:03 AM

34. Use the table below to find $(f / g)(1)$.

t	-3	-1	1	3
$f(t)$	15	10	–12	–1
$g(t)$	–7	5	–11	4

a. –1 b. $\frac{11}{12}$ c. 2 d. 132
e. $\frac{12}{11}$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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35. If $f(x) = 5x^2 + 8x$ and $g(x) = -2x^2 + 7$, find $(f + g)(x)$.

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a. $7x^2 + 15x + 7$ b. $3x^2 + 8x + 7$ c. $3x^2 + 8x$

d. $7x^2 + 15x$ e. $3x^2 + 15x$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:10 AM

36. If $f(x) = 8x^2 + 6x$ and $g(x) = -9x^2 + 1$, find $(f - g)(x)$.

a. $17x^2 + 6x - 1$ b. $-x^2 + 7x$ c. $17x^2 + 7x$

d. $-x^2 + 6x - 1$ e. $x^2 + 17x + 1$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:11 AM

37. If $f(x) = 8x^2 + 2x$ and $g(x) = -3x^2 + 1$, find $(fg)(x)$.

a. $-24x^2 + 8x$ b. $x^2 + 6x + 2$ c. $-24x^4 + 2x$

d. $-24x^4 - 6x^3 + 8x^2 + 2x$ e. $-24x^3 + 6x^2 + 2x$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:12 AM

38. If $f(x) = 3x^2 + 8x$ and $g(x) = -9x^2 + 6$, find $(f / g)(x)$.

a. Undefined b. $-3 + \frac{3}{4}x$ c. $-\frac{1}{3} + \frac{4}{3}x$

d. $\frac{-9x^2 + 6}{3x^2 + 8x}$ e. $\frac{3x^2 + 8x}{-9x^2 + 6}$

ANSWER: e

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2.7 Combining Functions

POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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39. If $f(x) = 5x^2 - 7x$ and $g(x) = 7x + 1$, find the domain of $(f + g)(x)$.

a. $(-\infty, 1]$ b. $[\frac{1}{7}, \infty)$ c. $(0, -\frac{7}{5})$

d. $(0, \infty)$ e. $(-\infty, \infty)$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:16 AM

40. If $f(x) = 2x^2 + 5x$ and $g(x) = -x^2 + 5$, find the domain of $(f / g)(x)$.

a. $(-\infty, 0) \cup (0, \infty)$

b. 0

c. $(-\infty, -\sqrt{5}) \cup (-\sqrt{5}, \sqrt{5}) \cup (\sqrt{5}, \infty)$

d. $(-\infty, 5) \cup (5, \infty)$

e. $(-\infty, \infty)$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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41. If $f(x) = \sqrt{1 + x}$ and $g(x) = \sqrt{9 - x^2}$, find $(f - g)(x)$.

a. $\sqrt{1+x} - \sqrt{9-x^2}$ b. $x^2 + x - 8$ c. $\sqrt{9-x^2} - \sqrt{1+x}$

d. $\sqrt{8 - x^2 - x}$ e. $\sqrt{x - 8 + x^2}$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)

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2.7 Combining Functions

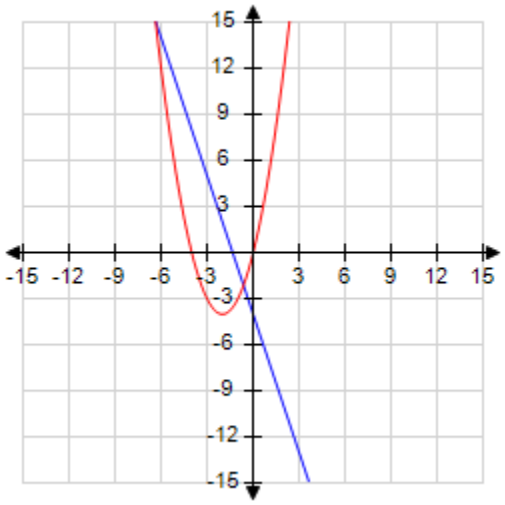
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:19 AM

42. If $f(x) = \sqrt{5+x}$ and $g(x) = \sqrt{9-x^2}$, find the domain of $(fg)(x)$.

a. $[-5, \infty)$ b. $[0, 5]$ c. $[0, 3]$ d. $[-3, 3]$
e. $(-\infty, \infty)$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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43. The graphs $f(x) = -3x - 4$ of and $g(x) = x^2 + 4x$ are given below. Which one of the following is the graph of $(g - f)(x)$?

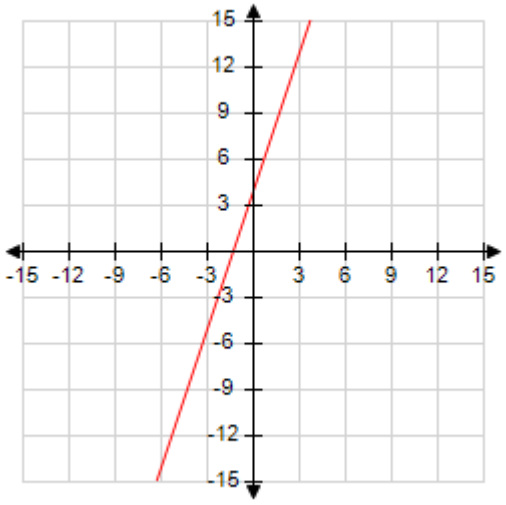


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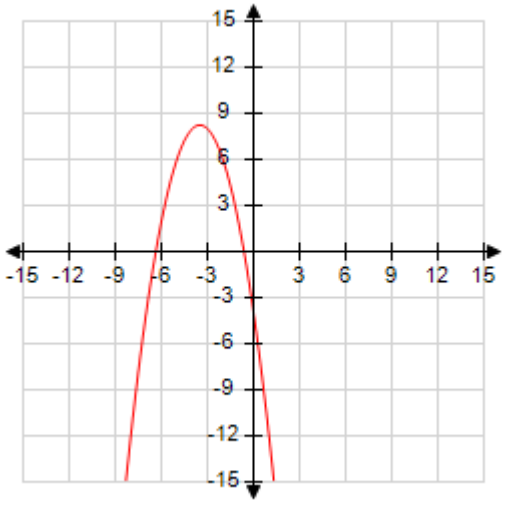
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2.7 Combining Functions

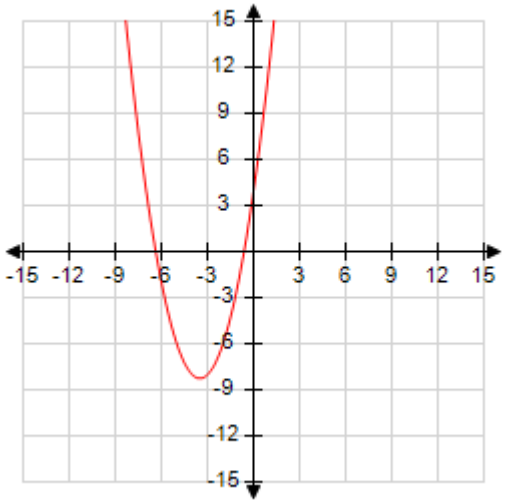
a.



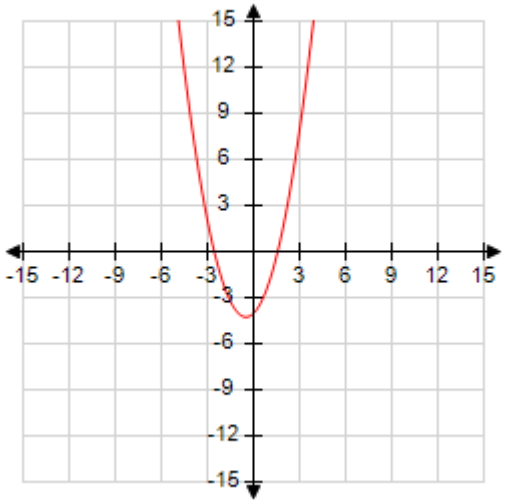
b.



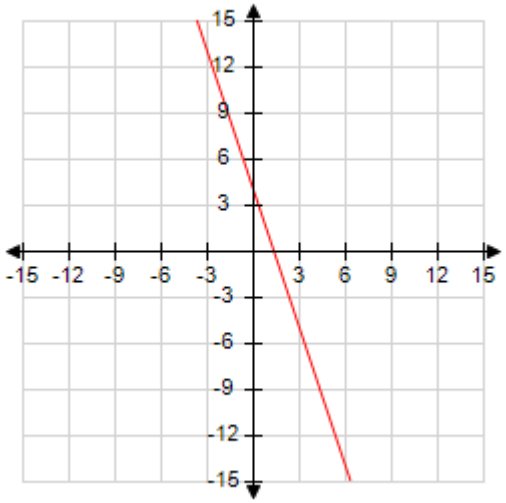
c.



d.



e.



ANSWER: c

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2.7 Combining Functions

POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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44. Let $f(x) = -x-5$ and $g(x) = x^2 + 5x$. Find $(fg)(-3)$.

a. 4 b. –8 c. $\frac{1}{3}$ d. –3

e. 12

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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45. Let $f(x) = 3x - 4$ and $g(x) = x^2 + 4x$. Find $(g - f)(-2)$.

a. $\frac{2}{5}$ b. –2 c. –14 d. 6

e. 40

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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DATE MODIFIED: 8/18/2014 6:43 AM

46. Let $f(x) = 5x - 6$ and $g(x) = x^2 + 6x$. Find $(f / g)(-3)$.

a. $\frac{7}{3}$ b. 12 c. $\frac{3}{7}$ d. 189

e. –30

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
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2.7 Combining Functions

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2.8 One-to-One Functions and Their Inverses

1. Assume f is a one-to-one function. If $f(x) = 8 - 2x$, find $f^{-1}(14)$.

a. 2
b. 8
c. –3
d. –8
e. 3

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.19m
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2. Assume g is a one-to-one function. If $g(x) = x^2 + 4x$ with $x \geq -2$, find $g^{-1}(2)$.

a. –2
b. 4
c. $4 + \sqrt{4}$
d. –4
e. $-2 + \sqrt{6}$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.20m
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3. Find the inverse function of $f(x) = 4x + 40$.

a. $f^{-1}(x) = \dfrac{4 - x}{40}$
b. $f^{-1}(x) = \dfrac{1}{4x + 40}$
c. $f^{-1}(x) = \dfrac{40 - x}{4}$
d. $f^{-1}(x) = \dfrac{x - 40}{4}$

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e. $f^{-1}(x) = \dfrac{4}{x - 40}$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.31m
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4. Use the Property of Inverse Functions to find the inverse function of $f(x) = x + 9$.

a. $f^{-1}(x) = -x + 9$

b. $f^{-1}(x) = \dfrac{1}{x + 9}$

c. $f^{-1}(x) = x - 9$

d. $f^{-1}(x) = x + 9$

e. $f^{-1}(x) = -x - 9$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.21m
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5. Find the inverse function of $f(x) = \dfrac{1}{x + 1}$.

a. $f^{-1}(x) = \dfrac{1}{x - 1}$

b. $f^{-1}(x) = x + 1$

c. $f^{-1}(x) = \dfrac{1}{x} + 1$

d. $f^{-1}(x) = \dfrac{1}{x} - 1$

e. $f^{-1}(x) = x - 1$

ANSWER: d

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2.8 One-to-One Functions and Their Inverses

POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.37m
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6. Find the inverse function of $f(x) = \dfrac{x-9}{x-2}$.

a. $f^{-1}(x) = \dfrac{2-x}{x-9}$

b. $f^{-1}(x) = \dfrac{-9x-2}{x-1}$

c. $f^{-1}(x) = \dfrac{9-2x}{1+x}$

d. $f^{-1}(x) = \dfrac{9-2x}{1-x}$

e. $f^{-1}(x) = \dfrac{9-2x}{x-1}$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.38m
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7. Find the inverse function of $f(x) = \dfrac{2-7x}{9-5x}$.

a. $f^{-1}(x) = \dfrac{9-x}{5-7x}$

b. $f^{-1}(x) = \dfrac{9x-2}{5x+7}$

c. $f^{-1}(x) = \dfrac{9x+2}{5x+7}$

d. $f^{-1}(x) = \dfrac{9x-2}{5x-7}$

e. $f^{-1}(x) = \dfrac{9-5x}{2-7x}$

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2.8 One-to-One Functions and Their Inverses

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:07 AM

8. Find the inverse function of $f(x) = \dfrac{3-9x}{8-4x}$.

a. $f^{-1}(x) = \dfrac{8-4x}{3-9x}$

b. $f^{-1}(x) = \dfrac{8x-3}{4x-9}$

c. $f^{-1}(x) = \dfrac{8-x}{4-9x}$

d. $f^{-1}(x) = \dfrac{8x-3}{4x+9}$

e. $f^{-1}(x) = \dfrac{8x+3}{4x+9}$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.39m
DATE CREATED: 6/11/2014 8:13 AM
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9. Find the inverse function of $f(x) = 9 + \sqrt[3]{x}$.

a. $f^{-1}(x) = \dfrac{1}{9+\sqrt[3]{x}}$

b. $f^{-1}(x) = x^3 - 9^3$

c. $f^{-1}(x) = (x+9)^3$

d. $f^{-1}(x) = (9-x)^3$

e. $f^{-1}(x) = (x-9)^3$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)

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2.8 One-to-One Functions and Their Inverses

HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.45m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:12 AM

10. Find the inverse function of $f(x) = (2 - x^3)^{\frac{1}{5}}$.

a. $f^{-1}(x) = \sqrt[3]{(2 - x^5)}$

b. $f^{-1}(x) = \sqrt[3]{2 - x^{\frac{1}{5}}}$

c. $f^{-1}(x) = \dfrac{1}{(2 - x^3)^{\frac{1}{5}}}$

d. $f^{-1}(x) = (2 - x^5)^3$

e. $f^{-1}(x) = 2 - x^{\frac{5}{3}}$

ANSWER: a
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.46m
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:19 AM

11. Find the inverse function of $f(x) = x^9 + 8$.

a. $f^{-1}(x) = (x^{\frac{1}{9}} - 8)$

b. $f^{-1}(x) = \sqrt[9]{(x - 8)}$

c. $f^{-1}(x) = \dfrac{1}{\sqrt[9]{x - 8}}$

d. ☒

e. $f^{-1}(x) = (x - 8)^9$

ANSWER: b

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2.8 One-to-One Functions and Their Inverses

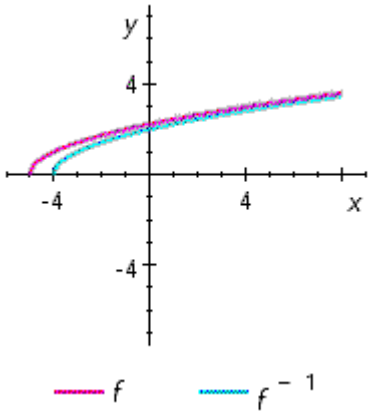
POINTS:	1
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
OTHER:	srca.03.07.50m
DATE CREATED:	6/11/2014 8:13 AM
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12. A function f is given.

$f(x) = \sqrt{x+5}$

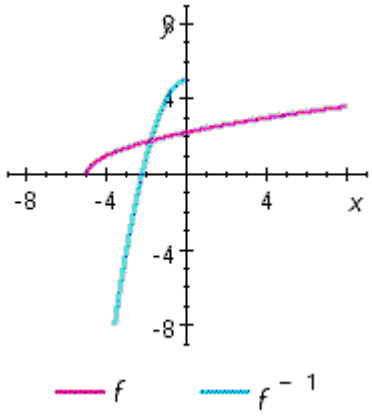
Sketch the graph of f. Use the graph of f to sketch the graph of f^{-1}. Find f^{-1}.

a.



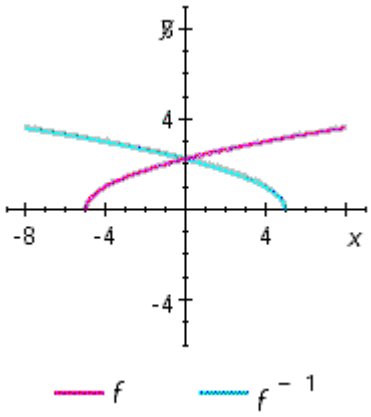
$f^{-1}(x) = \sqrt{x+4}$

b.



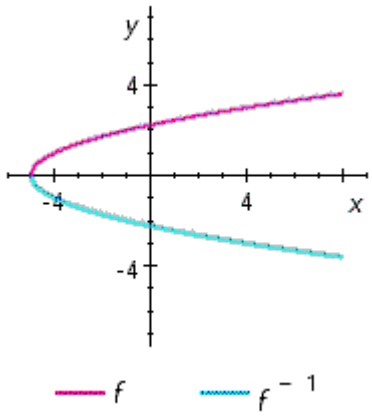
$f^{-1} = -x^2 + 5$

c.



$f^{-1}(x) = \sqrt{x-5}$

d.

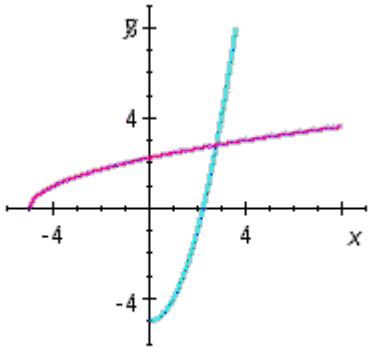


$f^{-1}(x) = -\sqrt{x+5}$

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e.



$f^{-1}(x) = x^2 - 5$

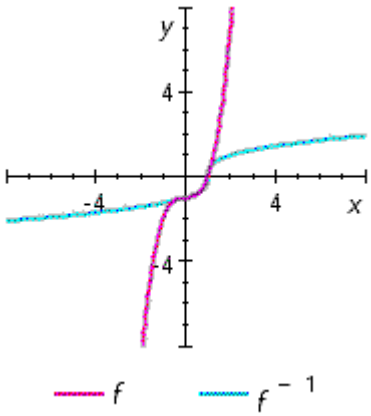
ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:26 AM

13. A function f is given.

$f(x) = x^3 - 1$

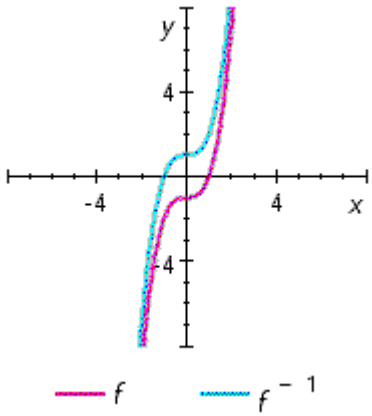
Sketch the graph of *f*. Use the graph of *f* to sketch the graph of f^{-1}. Find f^{-1}.

a.



$f^{-1}(x) = \sqrt[3]{x-1}$

b.

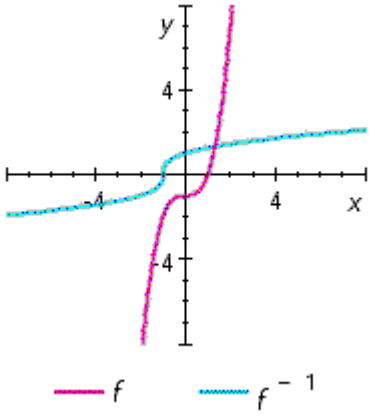


$f^{-1}(x) = x^3 + 1$

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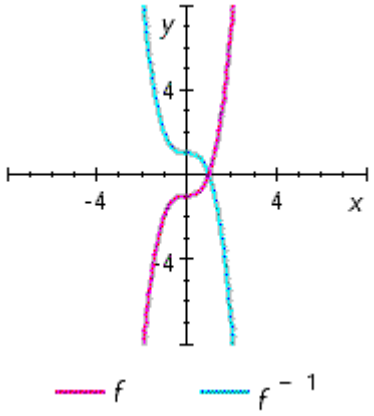
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c.



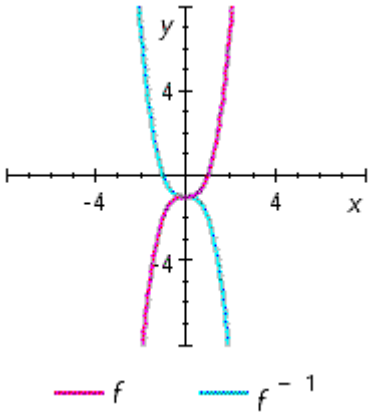
$f^{-1}(x) = \sqrt[3]{x+1}$

d.



$f^{-1}(x) = -x^3 + 1$

e.



$f^{-1}(x) = -x^3 - 1$

ANSWER: c
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:13 AM
DATE MODIFIED: 8/18/2014 6:28 AM

14. A one-to-one function is given.

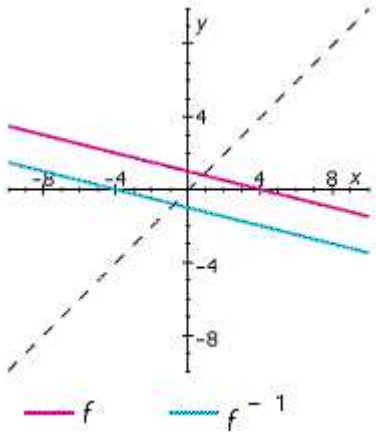
$$f(x) = 1 - \frac{1}{4}x$$

Find the inverse of the function. Graph both the function and its inverse on the same screen to verify that the graphs are reflections of each other in the line $y = x$.

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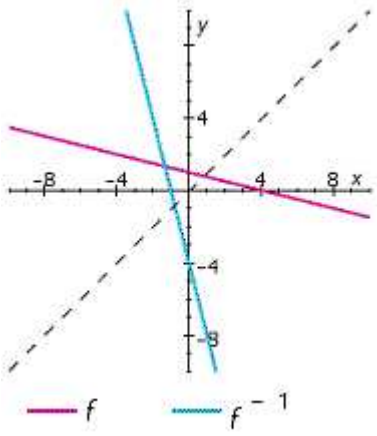
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a.



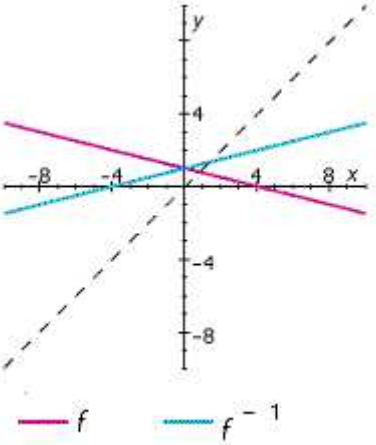
$f^{-1}(x) = 4 + 4x$

b.



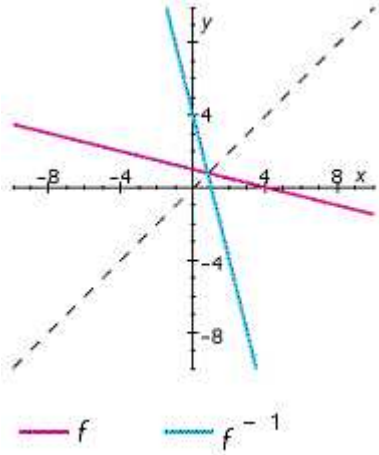
$f^{-1}(x) = 4 + 4x$

c.



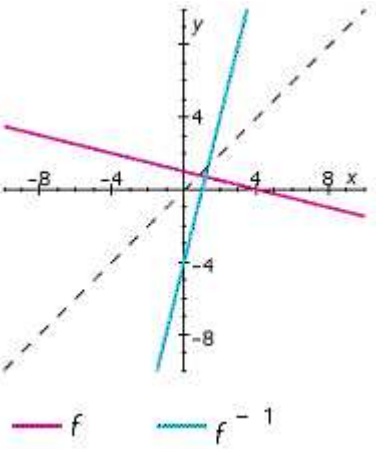
$f^{-1}(x) = -4 + 4x$

d.



$f^{-1}(x) = 4 - 4x$

e.



$f^{-1}(x) = -4 - 4x$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM

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2.8 One-to-One Functions and Their Inverses

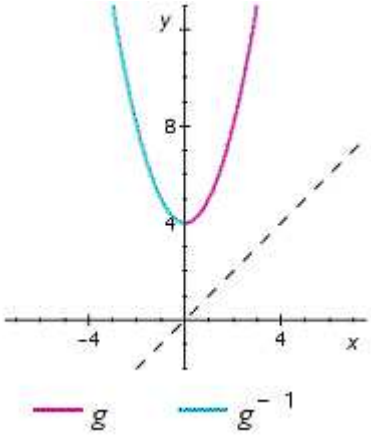
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15. A one-to-one function is given.

$g(x) = x^2 + 4,\ x \geq 0$

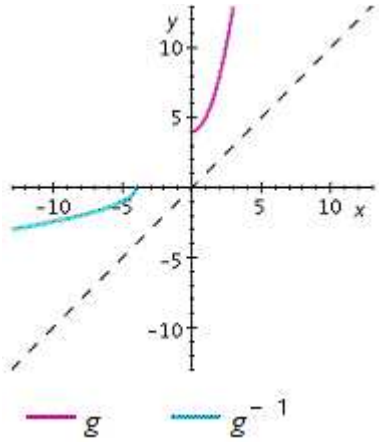
Find the inverse of the function. Graph both the function and its inverse on the same screen to verify that the graphs are reflections of each other in the line $y = x$.

a.



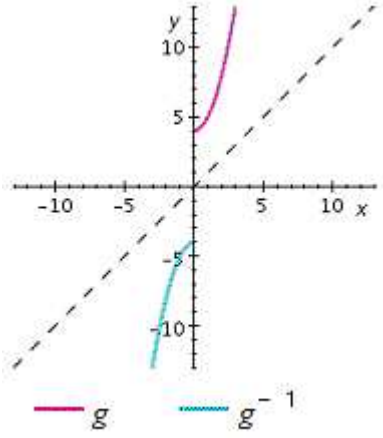
$g^{-1}(x) = x^2 + 4$

b.



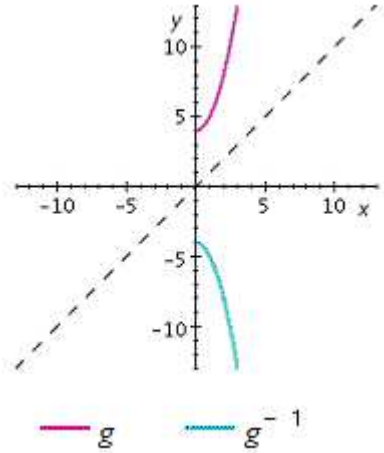
$g^{-1}(x) = -\sqrt{-x-4}$

c.



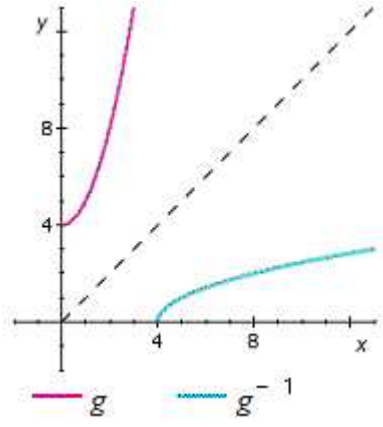
$g^{-1}(x) = -x^2 - 4$

d.



$g^{-1}(x) = -x^2 - 4$

e.



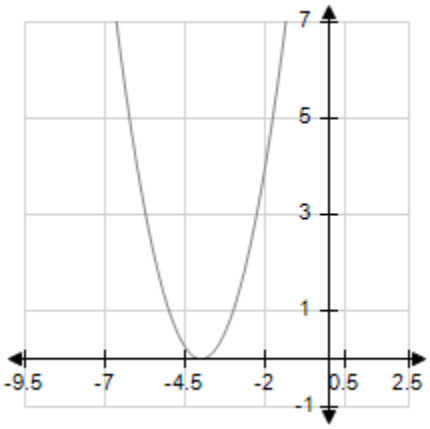
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$g^{-1}(x) = \sqrt{x-4}$

ANSWER: e
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 1:35 AM

16. The given function $f(x) = (x+4)^2$ is not one-to-one. Find a restricted domain for which the function is one-to-one. Also find the inverse of the function with the restricted domain.



a. $x \geq -7; f^{-1}(x) = \sqrt{x} - 4$

b. $x \geq -4; f^{-1}(x) = \sqrt{x} - 4$

c. $x \leq -4; f^{-1}(x) = -\sqrt{x} + 4$

d. $x \geq -7; f^{-1}(x) = \sqrt{x} + 4$

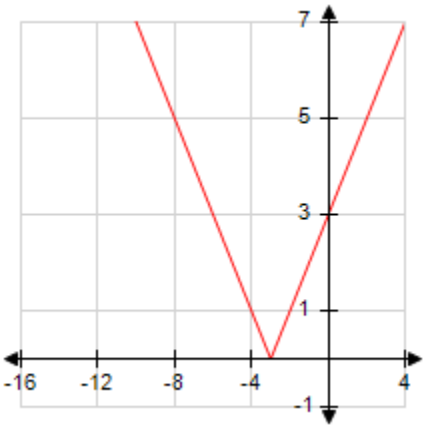
e. $x \geq -4; f^{-1}(x) = \sqrt{x} + 4$

ANSWER: b
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.63m
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 1:44 AM

17. The given function $f(x) = |x+3|$ is not one-to-one. If the domain of this function is restricted so that it is made to be one-to-one, determine the corresponding inverse function and its domain.

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a. $f^{-1}(x) = x - 3, x < 0$

b. $f^{-1}(x) = -3x - 1, x > 0$

c. $f^{-1}(x) = x + 3, x < 0$

d. $f^{-1}(x) = x - 3, x > 0$

e. $f^{-1}(x) = x + 3, x > 0$

ANSWER: d
POINTS: 1
QUESTION TYPE: Multi-Mode (Multiple choice)
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.64m
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 2:01 AM

18. Assume f is a one-to-one function.

(a) If $f(8) = 1$, find $f^{-1}(1)$

(b) If $f(2) = -7$, find $f^{-1}(-7)$.

ANSWER: 8; 2
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM
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19. Find the inverse function of $f(x) = 4x + 36$.

$f^{-1}(x) =$ _____

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ANSWER: $\frac{x-36}{4}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.31
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 1:55 AM

20. Find the inverse function of $f(x)=\frac{3-3x}{10-4x}$.

$f^{-1}(x)=$ _____

ANSWER: $\frac{10x-3}{4x-3}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.39
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 2:25 AM

21. Find the inverse function of $f(x)=\frac{x-6}{x-8}$.

$f^{-1}(x)=$ _____

ANSWER: $\frac{6-8x}{1-x}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.38
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22. Find the inverse function of $f(x)=\sqrt{4x+1}$.

$f^{-1}(x)=$ _____

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ANSWER: $\frac{x^2-1}{4}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.41
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 2:20 AM

23. Find the inverse function of f.

$f(x)=x^2-x, x \geq \frac{1}{2}$

ANSWER: $f^{-1}(x)=\sqrt{x+\frac{1}{4}}+\frac{1}{2}$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 2:29 AM

24. Find the inverse function of $f(x)=9+\sqrt{x+10}$.

$f^{-1}(x)=$ _____

ANSWER: $(x-9)^2-10$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.47
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 2:28 AM

25. Find the inverse function of $f(x)=\sqrt{36-x^2}, 0 \leq x \leq 6$.

$f^{-1}(x)=$ _____

ANSWER: $\sqrt{36-x^2}; 0 \leq x \leq 6$

POINTS: 1

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2.8 One-to-One Functions and Their Inverses

QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.48
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 2:18 AM

26. Draw the graph of f and use it to determine whether the function is one-to-one.

$$f(x) = \frac{x+11}{x-5}$$

f is _____
ANSWER: a one-to-one function
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 3:10 AM

27. Draw the graph of f and use it to determine whether the function is one-to-one.

$$f(x) = |x| - |x-8|$$

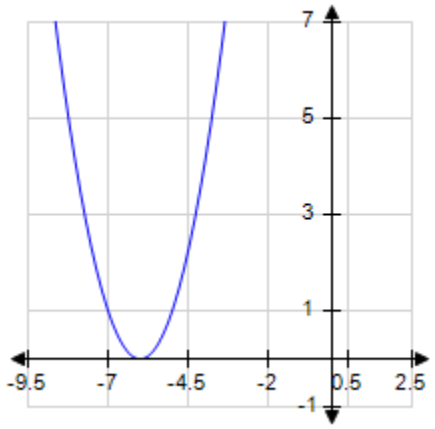
f is _____
ANSWER: not a one-to-one function
POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
STUDENT ENTRY MODE: Basic
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 7/18/2014 3:11 AM

28. The function $f(x) = (x+6)^2$ is not one-to-one.

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2.8 One-to-One Functions and Their Inverses



(a) What is the *least* restrictive domain so that the resulting function is one-to-one? _____

(b) Find the inverse of the function with the restricted domain. _____

ANSWER: $[-6, \infty)$, $\sqrt{x} - 6$

POINTS: 1
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: True
STUDENT ENTRY MODE: Basic
OTHER: srca.03.07.63
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 2:39 AM

29. $f(x) = \dfrac{4-x}{8}$ and $g(x) = 4 - 8x$ are inverse functions of each other.

(Use the Property of Inverse Functions.)

a. True
b. False

ANSWER: True
POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
OTHER: srca.03.07.24m
DATE CREATED: 6/11/2014 8:14 AM
DATE MODIFIED: 8/19/2014 2:31 AM

30. $f(x) = x^3 + 5$ and $g(x) = (x-5)^{\frac{1}{3}}$ are inverse functions of each other.

(Use the Property of Inverse Functions.)

a. True
b. False

ANSWER: True

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2.8 One-to-One Functions and Their Inverses

POINTS: 1
QUESTION TYPE: True / False
HAS VARIABLES: True
OTHER: srca.03.07.28m
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DATE MODIFIED: 8/19/2014 2:32 AM

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