Intermediate Algebra for College Students 8th edition Blitzer Test Bank

SKU: 9780136553434-TEST-BANK

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Write the English phrase as an algebraic expression. Let x represent the number.

1) The sum of a number and 64

A) 64 B) 64 – x C) 64 + x D) 64x

Answer: C

2) 127 less than a number

A) 127 – x B) x + 127 C) 127x D) 127

Answer: A

3) A number decreased by 66

A) 66 – x B) 66x C) 66 D) x – 66

Answer: D

4) 3 times a number

A) $\frac{3}{x}$ B) 3 – x C) 3x D) 3 + x

Answer: C

5) The product of 4 and a number

A) $\frac{4}{x}$ B) 4x C) 4 – x D) 4 + x

Answer: B

6) 4 less than 5 times a number

A) 5x – 4 B) 5 – 4x C) 4x – 5 D) 4 – 5x

Answer: A

7) 6 more than 9 times a number

A) 9x + 6 B) 6x + 9 C) 9(6 + x) D) 15x

Answer: A

8) A number divided by 50

A) 50x B) $\frac{x}{50}$ C) x – 50 D) $\frac{50}{x}$

Answer: B

9) The quotient of 22 and a number

A) $\frac{22}{x}$ B) x – 22 C) $\frac{x}{22}$ D) 22 – x

Answer: A

Evaluate the expression for the given values.

10) 4x + 9, for x = 5

A) 11 B) 13 C) 40 D) 29

Answer: D

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11) $4x - y$, for $x = 9$ and $y = 8$

A) 12 B) 44 C) 28 D) 72

Answer: C

12) $6x^2 + 8y$, for $x = 3$, $y = 9$

A) 126 B) 918 C) 396 D) 510

Answer: A

13) $(x + 4y)^2$, for $x = 3$, $y = 4$

A) 19 B) 49 C) 361 D) 38

Answer: C

Solve.

14) If a rock falls from a height of 60 meters above the ground, the height H (in meters) after x seconds is approximately $H = 60 - 4.9x^2$. What is the height of the rock after 3 seconds? (Round your answer to the nearest tenth.)

A) –156.09 m B) 45.3 m C) 495.9 m D) 15.9 m

Answer: D

15) Forensic scientists use the lengths of certain bones to calculate the height of a person. When the femur (the bone from the knee to the hip socket) is used, the following formula applies for men: $h = 69.09 + 2.24f$, where h is the height and f is the length of the femur (both in centimeters). Find the height of a man with a femur measuring 66 centimeters.

A) 216.93 cm B) 4707.78 cm C) 1.38 cm D) 135.09 cm

Answer: A

16) The formula $C = \frac{5}{9}(F - 32)$ converts Fahrenheit to Celsius degrees. The high temperature in a certain city was 50°F. Find the corresponding Celsius temperature (to the nearest degree).

A) –4°C B) 32°C C) 28°C D) 10°C

Answer: D

Determine whether the statement is true or false.

17) Every rational number is a natural number.

A) True B) False

Answer: B

18) Some real numbers are irrational numbers.

A) True B) False

Answer: A

19) Every irrational number is a rational number.

A) True B) False

Answer: B

20) All whole numbers are integers.

A) True B) False

Answer: A

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21) Some natural numbers are not whole numbers.
A) True B) False
Answer: B

22) Some integers are not whole numbers.
A) True B) False
Answer: A

23) Some square roots are not irrational.
A) True B) False
Answer: A

24) Every real number is either rational or irrational.
A) True B) False
Answer: A

25) Every real number is either an integer or irrational.
A) True B) False
Answer: B

26) All whole numbers are positive.
A) True B) False
Answer: B

27) Some integers are not positive.
A) True B) False
Answer: A

Use the roster method to list the elements in the set.

28) {x | x is a whole number between 5 and 9}
A) {6, 7, 8} B) {6, 7, 8, 9} C) {5, 6, 7, 8} D) {5, 6, 7, 8, 9}
Answer: A

29) {x | x is an integer between –8 and –4}
A) {–7, –6, –5, –4} B) {–8, –7, –6, –5, –4} C) {–8, –7, –6, –5} D) {–7, –6, –5}
Answer: D

30) {x | x is an integer greater than –4}
A) {–5, –6, –7} B) {–3, –2, –1, . . .} C) {–5, –6, –7, . . .} D) {–3, –2, –1, 0}
Answer: B

31) {x | x is a natural number multiple of 3}
A) {6, 9, 12, . . .} B) {–9, –6, –3, 0, 3, 6, 9,. . .}
C) {0, 3, 6, 9,. . .} D) {3, 6, 9, . . .}
Answer: D

32) {x | x is a natural number less than 8}
A) {0, 1, 2, 3, 4, 5, 6, 7} B) {1, 2, 3, 4, 5, 6, 7, 8}
C) {1, 2, 3, 4, 5, 6, 7} D) {0, 1, 2, 3, 4, 5, 6, 7, 8}
Answer: C

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Use the meaning of the symbols $\in$ and $\notin$ to determine whether the statement is true or false.

33) $-37 \in \{ x \mid x \text{ is an integer} \}$

A) True B) False

Answer: A

34) $7 \in \{ x \mid x \text{ is a rational number} \}$

A) True B) False

Answer: A

35) $\sqrt{8} \in \{ x \mid x \text{ is a rational number} \}$

A) True B) False

Answer: B

36) $0 \notin \{ x \mid x \text{ is an irrational number} \}$

A) True B) False

Answer: A

37) $39 \in \{ x \mid x \text{ is an irrational number} \}$

A) True B) False

Answer: B

38) $-28 \notin \{ x \mid x \text{ is a natural number} \}$

A) True B) False

Answer: A

39) $\sqrt{6} \notin \{ x \mid x \text{ is an irrational number} \}$

A) True B) False

Answer: B

40) $\frac{1}{4} \in \{ x \mid x \text{ is an irrational number} \}$

A) True B) False

Answer: B

41) $\frac{1}{3} \notin \{ x \mid x \text{ is a rational number} \}$

A) True B) False

Answer: B

42) $-1 \notin \{ x \mid x \text{ is a whole number} \}$

A) True B) False

Answer: A

43) $\sqrt{5} \notin \{ x \mid x \text{ is a real number} \}$

A) True B) False

Answer: B

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By definition, an "and" statement is true only when the statements before and after the "and" connective are both true. Use this definition to determine whether the given statement is true or false.

44) $19 \in \{1, 2, 3, ...\}$ and $\{1\} \in \{1, 2, 3, 4\}$

A) True B) False

Answer: B

45) $5 \in \{1, 2, 3,.....\}$ and $-8 \notin \{1, 2, 3,....\}$

A) True B) False

Answer: A

46) $\left(\frac{12}{70} + \frac{11}{70}\right) \in \{x \mid x \text{ is a whole number}\}$ and the value of $23x^2(x + 70) - 23x^2(70 + x)$, for $x = 100$ is 0.

A) True B) False

Answer: B

47) $\left(\frac{2}{7} - \frac{9}{7}\right) \in \{x \mid x \text{ is an integer}\}$ and the value of $5x^2(x + 2) - 5(x + 2)x^2$, for $x = 100$ is 0.

A) True B) False

Answer: A

48) $-2000 \in \{x \mid x \text{ is an integer}\}$ and eleven subtracted from twice a number is represented by $2x - 11$.

A) True B) False

Answer: A

49) $-40{,}000 \in \{x \mid x \text{ is a whole number}\}$ and twelve subtracted from four times a number is represented by $4x - 12$.

A) True B) False

Answer: B

50) Four times the difference of a number and nine is represented by $4x - 9$ and $\pi \in \{x \mid x \text{ is an irrational number}\}$

A) True B) False

Answer: B

51) Twice the sum of a number and ten is represented by $2(x + 10)$ and $0 \in \{x \mid x \text{ is a natural number}\}$

A) True B) False

Answer: B

52) Four times the difference of a number and seven is represented by $4(x - 7)$ and $\frac{4}{13} \in \{x \mid x \text{ is a rational number}\}$

A) True B) False

Answer: A

53) The quotient of a number and the sum of the number and 7 is represented by $\frac{x}{x+7}$ and

$\sqrt{2} \notin \{x \mid x \text{ is a rational number}\}$

A) True B) False

Answer: A

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Determine whether the inequality is true or false.

54) $-56 < 0$

A) True B) False

Answer: A

55) $6 > 11$

A) True B) False

Answer: B

56) $11 < -4$

A) True B) False

Answer: B

57) $11 > 4$

A) True B) False

Answer: A

58) $2 \leq 1$

A) True B) False

Answer: B

59) $10 \geq 7$

A) True B) False

Answer: A

60) $-12 \leq 24$

A) True B) False

Answer: A

61) $-1 \geq 4$

A) True B) False

Answer: B

62) $-12 < -16$

A) True B) False

Answer: B

63) $-18 \geq -18$

A) True B) False

Answer: A

64) $-18 \geq 18$

A) True B) False

Answer: B

65) $-7 < \frac{7}{5}$

A) True B) False

Answer: A

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By definition, an "and" statement is true only when the statements before and after the "and" connective are both true. Use this definition to determine whether the given statement is true or false.

66) $0.8 > 0.\overline{8}$ and $15 \le 7 + 8$

A) True B) False

Answer: B

67) $-0.8 > -0.\overline{8}$ and $-15 \le 7 + 8$

A) True B) False

Answer: A

68) $-0.2 \le -0.\overline{2}$ and $6 \cdot 2 > 6 + 2$

A) True B) False

Answer: B

69) $\{x \mid x \text{ is a whole number between 4 and 7}\} = \{5, 6\}$ and $\sqrt{2} < 2$

A) True B) False

Answer: A

70) $\{x \mid x \text{ is a natural number between 10 and 13}\} = \{10, 11, 12, 13\}$ and $-\sqrt{3} > -3$

A) True B) False

Answer: B

71) $\{x \mid x \text{ is an integer between } -4 \text{ and } 1\} = \{-3, -2, -1, 0\}$ and $-\pi < -3$

A) True B) False

Answer: A

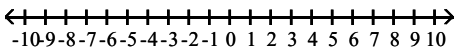
72) $\{x \mid x \text{ is an integer between } -3 \text{ and } 2\} = \{-3, -2, -1, 0, 1, 2\}$ and $-2.2 \le -\frac{\pi}{2}$

A) True B) False

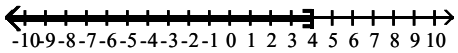
Answer: B

Express the interval in set builder notation and graph the interval on a number line.

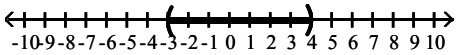
73) $(-3, 4]$



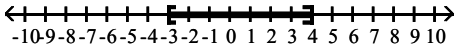
A) $\{x \mid x \le 4\}$



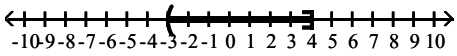
B) $\{x \mid -3 < x < 4\}$



C) $\{x \mid -3 \le x \le 4\}$



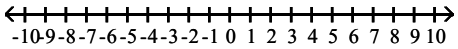
D) $\{x \mid -3 < x \le 4\}$



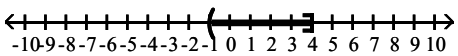
Answer: D

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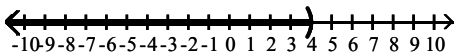
74) [–1, 4)



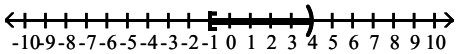
A) {x | –1 < x ≤ 4 }



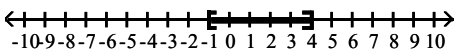
B) {x | x < 4 }



C) {x | –1 ≤ x < 4 }

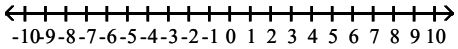


D) {x | –1 ≤ x ≤ 4 }

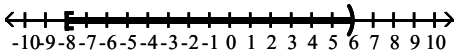


Answer: C

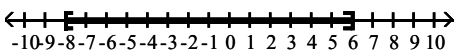
75) [–8, 6]



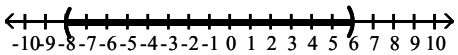
A) {x | –8 ≤ x < 6 }



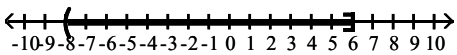
B) {x | –8 ≤ x ≤ 6 }



C) {x | –8 < x < 6 }

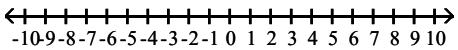


D) {x | –8 < x ≤ 6 }

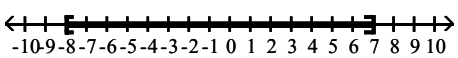


Answer: B

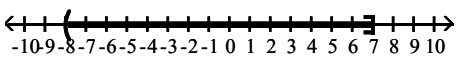
76) (–8, 7)



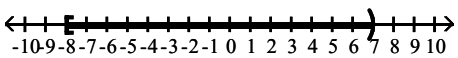
A) {x | –8 ≤ x ≤ 7 }



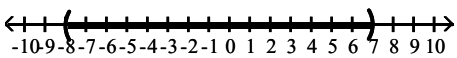
B) {x | –8 < x ≤ 7 }



C) {x | –8 ≤ x < 7 }

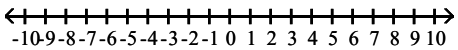


D) {x | –8 < x < 7 }

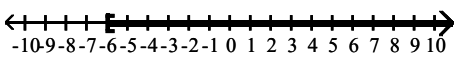


Answer: D

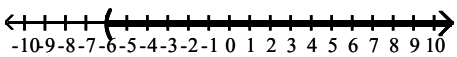
77) (–6, ∞)



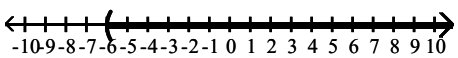
A) {x | x > –6 }



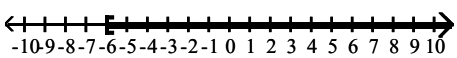
B) {x | x ≥ –6 }



C) {x | x > –6 }



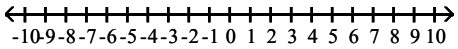
D) {x | x ≥ –6 }



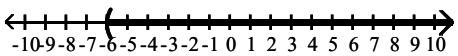
Answer: C

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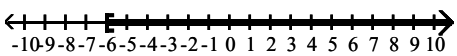
78) $[-6, \infty)$



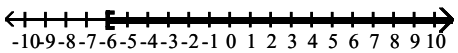
A) $\{x \mid x \geq -6\}$



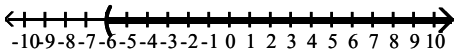
B) $\{x \mid x > -6\}$



C) $\{x \mid x \geq -6\}$

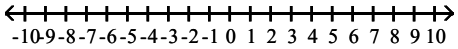


D) $\{x \mid x > -6\}$

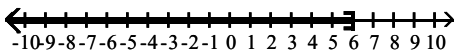


Answer: C

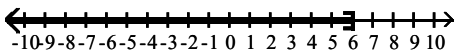
79) $(-\infty, 6]$



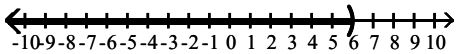
A) $\{x \mid x \leq 6\}$



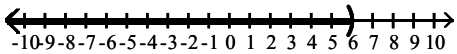
B) $\{x \mid x < 6\}$



C) $\{x \mid x \leq 6\}$

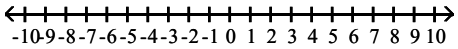


D) $\{x \mid x < 6\}$

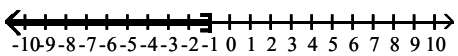


Answer: A

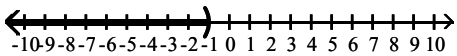
80) $(-\infty, -1)$



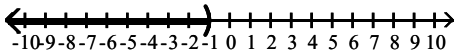
A) $\{x \mid x < -1\}$



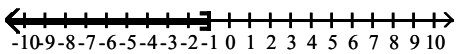
B) $\{x \mid x \leq -1\}$



C) $\{x \mid x < -1\}$

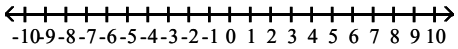


D) $\{x \mid x \leq -1\}$

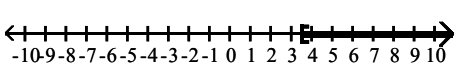


Answer: C

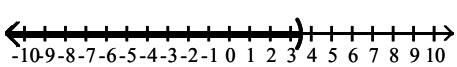
81) $(-\infty, 3.5]$



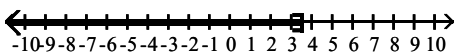
A) $\{x \mid x \geq 3.5\}$



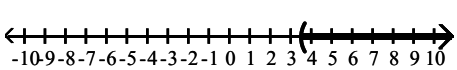
B) $\{x \mid x < 3.5\}$



C) $\{x \mid x \leq 3.5\}$



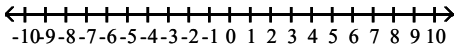
D) $\{x \mid x > 3.5\}$



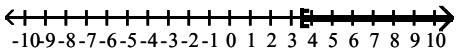
Answer: C

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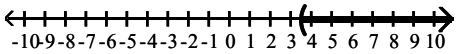
82) $(-\infty, 3.5)$



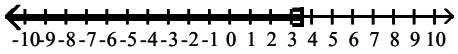
A) $\{x \mid x \geq 3.5\}$



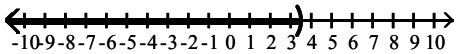
B) $\{x \mid x > 3.5\}$



C) $\{x \mid x \leq 3.5\}$

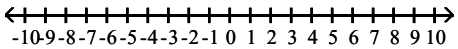


D) $\{x \mid x < 3.5\}$

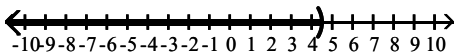


Answer: D

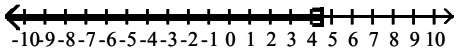
83) $(4.5, \infty)$



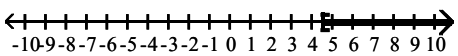
A) $\{x \mid x < 4.5\}$



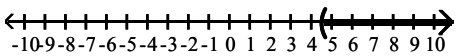
B) $\{x \mid x \leq 4.5\}$



C) $\{x \mid x \geq 4.5\}$

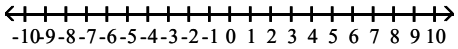


D) $\{x \mid x > 4.5\}$

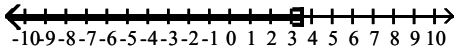


Answer: D

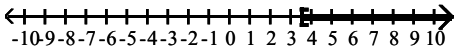
84) $[3.5, \infty)$



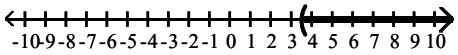
A) $\{x \mid x \leq 3.5\}$



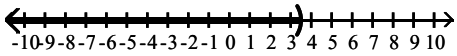
B) $\{x \mid x \geq 3.5\}$



C) $\{x \mid x > 3.5\}$



D) $\{x \mid x < 3.5\}$



Answer: B

Find the absolute value.

85) $|15|$

A) 30 B) 15 C) -15 D) 0

Answer: B

86) $|-13|$

A) 13 B) -13 C) 0 D) 26

Answer: A

87) $-|-14|$

A) 14 B) -14 C) 28 D) 0

Answer: B

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88) $|0|$

A) 1 B) 10 C) 0 D) –1

Answer: C

89) $-|6|$

A) 0 B) –6 C) –12 D) 6

Answer: B

90) $|3.9|$

A) 7.8 B) –3.9 C) 0 D) 3.9

Answer: D

91) $|-5.8|$

A) 5.8 B) 0 C) 11.6 D) –5.8

Answer: A

92) $|-\sqrt{2}|$

A) 2 B) –2 C) $\sqrt{2}$ D) $-\sqrt{2}$

Answer: C

93) $-\left|-\frac{5}{2}\right|$

A) 9 B) $\frac{5}{2}$ C) $-\frac{5}{2}$ D) –21

Answer: C

Add as indicated.

94) $14 + (-11)$

A) –25 B) 25 C) –3 D) 3

Answer: D

95) $-4 + 14$

A) –18 B) 18 C) 10 D) –10

Answer: C

96) $-5 + (-11)$

A) 16 B) –16 C) 6 D) –6

Answer: B

97) $-6.1 + 4.4$

A) 10.5 B) 1.7 C) –10.5 D) –1.7

Answer: D

98) $\frac{3}{5} + \left(-\frac{2}{5}\right)$

A) – 1 B) $\frac{1}{5}$ C) $-\frac{1}{5}$ D) 1

Answer: B

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99) $-\frac{9}{10}-\frac{1}{5}$

A) $-\frac{2}{3}$ B) $-\frac{19}{10}$ C) $-\frac{11}{10}$ D) $-\frac{1}{5}$

Answer: C

100) −20.4 + (−14.2)

A) 34.6 B) 6.2 C) −6.2 D) −34.6

Answer: D

101) 0 + (−9.4)

A) 1.6 B) 0 C) −9.4 D) 9.4

Answer: C

102) 8.0 + (−8.0)

A) 8.0 B) 2 C) −8.0 D) 0

Answer: D

Find –x for the given value of x.

103) x = 13

A) $\frac{1}{13}$ B) 13 C) 0 D) −13

Answer: D

104) x = −22

A) 0 B) −22 C) $-\frac{1}{22}$ D) 22

Answer: D

105) x = 10

A) 10 B) 0 C) $\frac{1}{10}$ D) −10

Answer: D

106) x = −1.5

A) 1.5 B) −1.5 C) $\frac{1}{-1.5}$ D) 0

Answer: A

107) $x=\frac{5}{9}$

A) $-\frac{5}{9}$ B) 0 C) $\frac{5}{9}$ D) $\frac{9}{5}$

Answer: A

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108) $x = -\frac{3}{7}$

A) $-\frac{7}{3}$ B) $-\frac{3}{7}$ C) $\frac{3}{7}$ D) 0

Answer: C

109) $x = -\frac{7}{6}$

A) $-\frac{6}{7}$ B) $\frac{7}{6}$ C) $\frac{6}{7}$ D) $-\frac{7}{6}$

Answer: B

110) $x = \frac{9}{10}$

A) $-\frac{9}{10}$ B) $\frac{9}{10}$ C) $\frac{10}{9}$ D) $-\frac{10}{9}$

Answer: A

111) $x = -\sqrt{7}$

A) -7 B) 7 C) $-\sqrt{7}$ D) $\sqrt{7}$

Answer: D

Subtract as indicated.

112) $5 - 8$

A) 3 B) -3 C) 13 D) -13

Answer: B

113) $-8 - 10$

A) -18 B) 18 C) -2 D) 2

Answer: A

114) $-15 - (-8)$

A) 7 B) -7 C) 23 D) -23

Answer: B

115) $8 - (-7)$

A) 1 B) 15 C) -1 D) -15

Answer: B

116) $-4.7 - 8.4$

A) -13.1 B) -3.7 C) 3.7 D) 13.1

Answer: A

117) $\frac{1}{10} - \left(-\frac{2}{5}\right)$

A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) $\frac{3}{10}$ D) $-\frac{3}{10}$

Answer: B

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118) $-\frac{3}{4}-\frac{5}{8}$

A) $-\frac{11}{8}$ B) -1 C) $\frac{11}{8}$ D) $-\frac{1}{4}$

Answer: A

119) $-\frac{4}{5}-\left(-\frac{7}{10}\right)$

A) $-\frac{3}{10}$ B) $-\frac{11}{10}$ C) $-\frac{1}{10}$ D) $\frac{1}{10}$

Answer: C

120) $\frac{1}{2}-\left(-\frac{2}{3}\right)$

A) $-\frac{1}{6}$ B) $\frac{7}{6}$ C) $-\frac{11}{90}$ D) $-\frac{7}{6}$

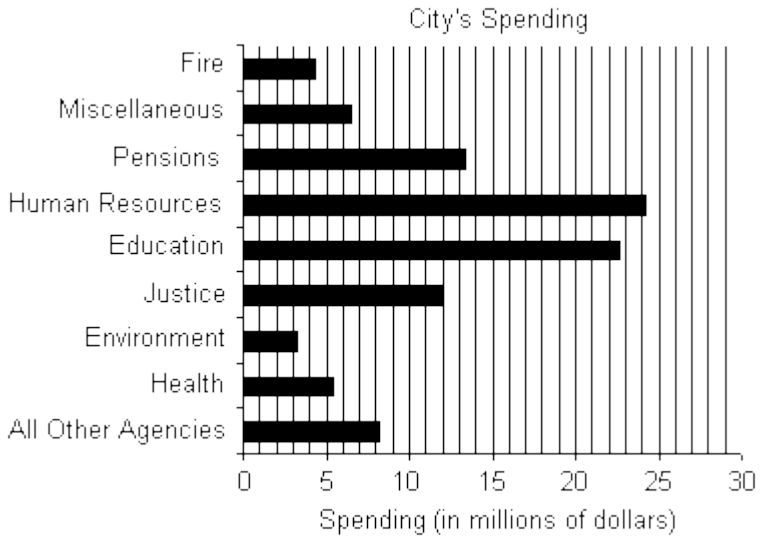
Answer: B

121) $0-(-\sqrt{3})$

A) -3 B) 3 C) $\sqrt{3}$ D) $-\sqrt{3}$

Answer: C

The bar graph shows the expenditures of one city government in a recent year.



122) How much more is spent on Health than on Fire?

A) $1.1 million B) $2.6 million C) $4.3 million D) $2.4 million

Answer: A

Multiply as indicated.

123) $9 \cdot 25$

A) 225 B) 216 C) 125 D) 2250

Answer: A

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124) $39(-25)$

A) 975 B) −975 C) −1014 D) −1075

Answer: B

125) $(-45)(46)$

A) −20,700 B) −2116 C) −2170 D) −2070

Answer: D

126) $(-7)(-44)$

A) 3080 B) 208 C) 315 D) 308

Answer: D

127) $\frac{4}{9}(-1)$

A) $-\frac{4}{9}$ B) $\frac{4}{9}$ C) $\frac{3}{5}$ D) $-\frac{3}{5}$

Answer: A

128) $-\sqrt{10} \cdot 0$

A) −10 B) 0 C) $\sqrt{10}$ D) $-\sqrt{10}$

Answer: B

129) $(6)(-7)(-7)$

A) −84 B) 304 C) −294 D) 294

Answer: D

130) $2(-1)(3)(-2)$

A) −12 B) 12 C) 8 D) 1

Answer: B

Evaluate.

131) $(-10)^2$

A) −100 B) −20 C) 20 D) 100

Answer: D

132) -4^3

A) −1 B) 64 C) −12 D) −64

Answer: D

133) $(-5)^3$

A) −2 B) 125 C) −15 D) −125

Answer: D

134) $-\left(-\frac{6}{7}\right)^3$

A) $-\frac{18}{7}$ B) $\frac{6^3}{7}$ C) $\frac{216}{343}$ D) $-\frac{216}{343}$

Answer: C

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135) $(-1)^{35}$

A) –35 B) 1 C) 35 D) –1

Answer: D

Divide as indicated or state that the division is undefined.

136) $\frac{-216}{9}$

A) –34 B) 24 C) $-\frac{1}{24}$ D) –24

Answer: D

137) $\frac{60}{-3}$

A) $-\frac{1}{20}$ B) 20 C) –20 D) –30

Answer: C

138) $\frac{-252}{-9}$

A) 18 B) –28 C) $\frac{1}{28}$ D) 28

Answer: D

139) $-\frac{1.9}{0}$

A) 1.9 B) –1.9 C) 0 D) Undefined

Answer: D

140) $\frac{0}{-9.2}$

A) Undefined B) –9.2 C) 0 D) 9.2

Answer: C

141) $-\frac{4}{13} \div \left(-\frac{3}{7}\right)$

A) $\frac{28}{39}$ B) $-\frac{28}{39}$ C) $\frac{39}{28}$ D) $-\frac{12}{91}$

Answer: A

142) $\frac{8}{9} \div \left(-\frac{5}{9}\right)$

A) $-\frac{8}{5}$ B) $\frac{5}{8}$ C) $\frac{8}{5}$ D) $-\frac{40}{81}$

Answer: A

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143) $35 \div \left(-\frac{5}{7}\right)$

A) −25 B) −49 C) 49 D) 25

Answer: B

Use the order of operations to simplify the expression.

144) $-16 + 120 \div (-6)$

A) −17 B) 17 C) 36 D) −36

Answer: D

145) $0 \div 8 + 5 \cdot 9$

A) 117 B) 45 C) 53 D) Undefined

Answer: B

146) $6^3 - (-11)^2$

A) 40 B) 95 C) −103 D) 337

Answer: B

147) $75 - 8 \cdot 3 + 20 \div (-4)$

A) −22 B) 46 C) 196 D) −385

Answer: B

148) $8 \cdot [3(4 - 7) - 6]$

A) 68 B) 72 C) −120 D) −57

Answer: C

149) $25 - [10 - (2 - 8)] + (4 - 6)^3$

A) 29 B) 1 C) −17 D) 17

Answer: B

150) $\frac{(-4) \cdot (3 - 3) + (-4) \cdot 2}{(-4) \cdot (7 - 4)}$

A) 0 B) $\frac{13}{12}$ C) $\frac{2}{3}$ D) 2

Answer: C

151) $\frac{32 + 9 \cdot 9}{8^2 - 8 \cdot 6 + -15 - 1^3}$

A) Undefined B) $\frac{113}{88}$ C) 113 D) $\frac{113}{40}$

Answer: A

152) $13 - \sqrt{3^2 + 3 \cdot 9}$

A) $13 - 3\sqrt{27}$ B) 7 C) 19 D) 6

Answer: B

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153) $\sqrt{8^2} - |-1 + 10| + 8$

A) –9 B) 7 C) 63 D) 25

Answer: B

Solve the problem.

154) Your company uses the quadratic model $y = -11x^2 + 350x$ to represent how many units (y) of a new product will be sold (x) weeks after its release. How many units can you expect to sell in week 19?

A) 6859 units B) 2679 units C) 6441 units D) 10,621 units

Answer: B

155) If a ball is thrown upward with a speed of 33.1 feet per second from a 124.26 ft high window, then its height t seconds after it is thrown is given by the formula $h = -16t^2 + 33.1t + 124.26$. Find the height of the ball 0.9 seconds after it is thrown.

A) 107.43 ft B) 167.01 ft C) 81.51 ft D) 141.09 ft

Answer: D

156) The formula $C = 0.053x^2 + 0.66x + 4.2$ can be used to approximate the number, C, (in millions) of laptops sold over a ten–year period, where x is the number of years since the first year this information was recorded. According to this formula, how many laptops were sold in year 8? Round the answer to the nearest tenth of a million.

A) 4.2 million B) 11.4 million C) 12.9 million D) 9.9 million

Answer: C

157) The median age at which men in a certain county were first married can be modeled by the formula $A = 0.0038x^2 - 0.42x + 36.13$ where x is the number of years after 2000. What would be the predicted median age at first marriage for men in the year 2055? Round to the nearest tenth of a year.

A) 26.7 yr B) 27.2 yr C) 24.5 yr D) 23.7 yr

Answer: C

158) Raleigh has a total of 51 coins, all of which are either dimes or nickels. If d of the coins are dimes, then the total value of the coins (in dollars) is given by the algebraic expression $0.1d + 0.05(51 - d)$. If the number of dimes is 22, determine the total value of the coins.

A) \$6.05 B) \$4.65 C) \$3.90 D) \$3.65

Answer: D

159) There were 39,000 people at a ball game in Los Angeles. Each person paid either \$11 for a reserved seat or \$6 for general admission. If the number who paid \$11 for a reserved seat was x, then the total receipts for the game are given by the algebraic expression $11x + 6(39{,}000 - x)$. Find the total receipts for the game if the number who paid \$ 11 was 14,000.

A) \$258,000 B) \$304,000 C) \$282,000 D) \$218,000

Answer: B

160) Paul has \$25,000 to invest. He puts x dollars in a safe government–insured certificate of deposit paying 5% per year. He invests the remainder of the money in noninsured corporate bonds paying 12% per year. His total interest earned at the end of the year is given by the algebraic expression $0.05x + 0.12(25{,}000 - x)$. Simplify this expression.

A) $3000 - 0.07x$ B) $3000 + 0.17x$ C) $3000 - 0.95x$ D) $3000 + 0.07x$

Answer: A

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161) Paul has $40,000 to invest. He puts x dollars in a safe government–insured certificate of deposit paying 5% per year. He invests the remainder of the money in noninsured corporate bonds paying 11% per year. His total interest earned at the end of the year is given by the algebraic expression $0.05x + 0.11(40{,}000 - x)$. Determine the amount of interest earned at the end of the year if he invests $12,000 in the government–insured certificate of deposit.

A) $5120 B) $6320 C) $3680 D) $4048

Answer: C

Use the indicated property to write an algebraic expression equivalent to the given expression.

162) $1 + x$; commutative

A) $-x - 1$ B) $x - 1$ C) $1 - x$ D) $x + 1$

Answer: D

163) $-14 \cdot x$; commutative of multiplication

A) $14 - x$ B) $14 \cdot x$ C) $x \cdot (-14)$ D) $x - (14)$

Answer: C

164) $6x + 24$; commutative of addition

A) $6x - 24$ B) $-6x + 24$ C) $24x + 6$ D) $24 + 6x$

Answer: D

165) $(4x + 7) + 3$; associative

A) $(4x + 7 + 3)$ B) $(7 + 4x) + 3$ C) $4x + 7 + 3$ D) $4x + (7 + 3)$

Answer: D

166) $5 \cdot (az)$; associative

A) $(5a) \cdot z$ B) $5 \cdot (z + a)$ C) $5 + (az)$ D) $(az) \div 5$

Answer: A

167) $\frac{3}{4}(4y)$; associative

A) $12y$ B) $3y$ C) $-7y$ D) $-3y$

Answer: B

168) $\frac{7}{4}\left(\frac{4}{7}\right)t$; associative

A) t B) $\left(\frac{4}{7}\right)t$ C) $\frac{49}{16}t$ D) $\frac{65}{28}t$

Answer: A

169) $7(9n + 9)$; distributive

A) $63n + 9$ B) $16n + 16$ C) $63n + 63$ D) $126n$

Answer: C

170) $-(-7x + 4)$; distributive

A) $7x - 4$ B) $-7x - 4$ C) $7x + 4$ D) $-7x + 4$

Answer: A

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Simplify the algebraic expression.

171) $2x + 5x$

A) $-3x$ B) $7x$ C) $7 + x$ D) $10x$

Answer: B

172) $-7x^3 + 3x^3$

A) $-4x^3$ B) $-4x^9$ C) $-5x^3$ D) $-4x^6$

Answer: A

173) $-2x - 2y + 8x - 2y$

A) $2xy$ B) $-4x + 6y$ C) $6x - 4y$ D) $-2x + 8x - 2y - 2y$

Answer: C

174) $-6(2x - 7) - 4x + 10$

A) $-16x - 32$ B) $-16x + 52$ C) $8x + 52$ D) $16x + 52$

Answer: B

175) $5(6x - 4) - 2(x - 1)$

A) $20x - 18$ B) $28x - 5$ C) $28x - 22$ D) $28x - 18$

Answer: D

176) $-8[4x^2 - 7(-5 - x)]$

A) $-32x^2 + 56x - 280$ B) $-32x^2 - 56x - 280$ C) $-32x^2 + 8x - 280$ D) $-32x^2 + 7x + 35$

Answer: B

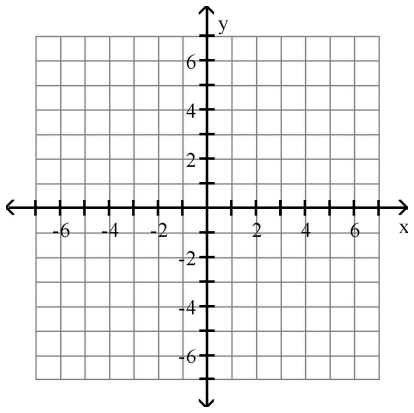
177) $-[2x^2 + (-10x^2 + 5)] + [-(-3x^2 + (9 + 4x^2)) + 7x^2]$

A) $2x^2 + 14$ B) $2x^2 + 4$ C) $14x^2 - 14$ D) $16x^2 + 4$

Answer: C

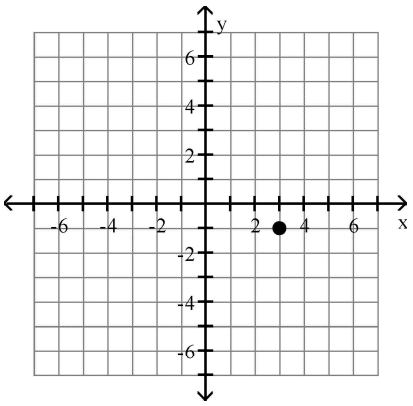
Plot the point in the rectangular coordinate system.

178) (3,1)

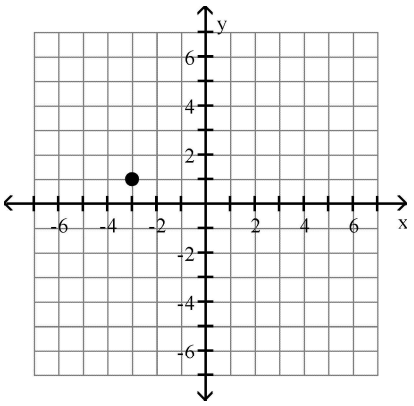


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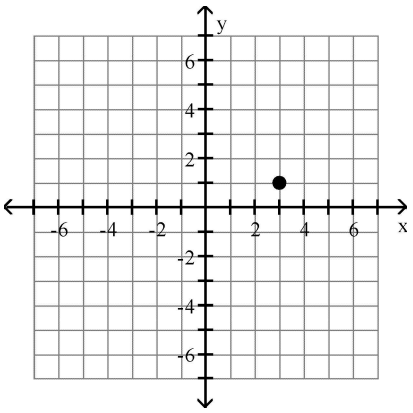
A)



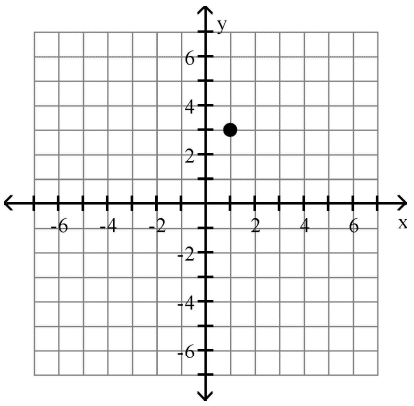
B)



C)

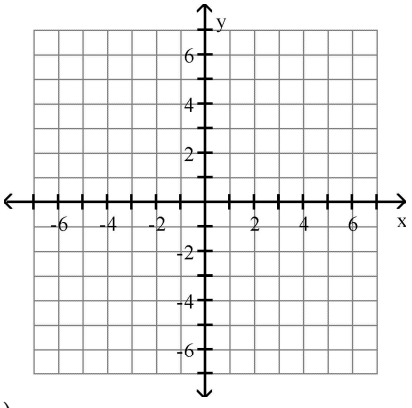


D)

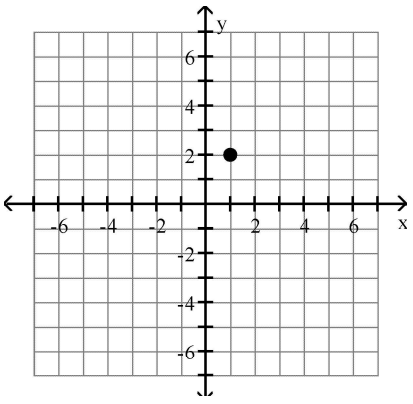


Answer: C

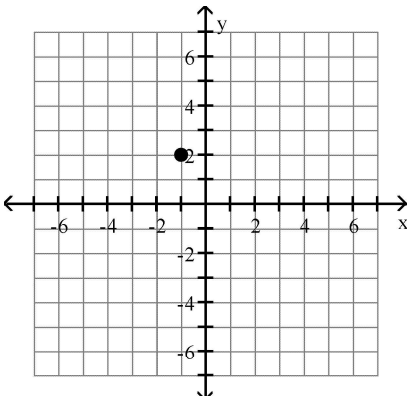
179) (–1,2)



A)

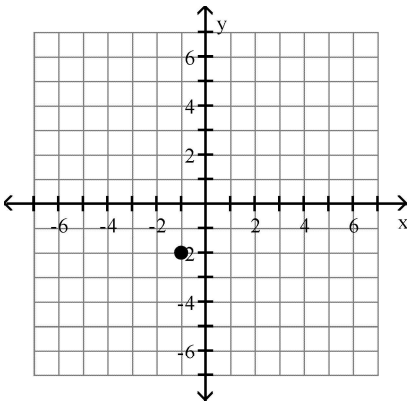


B)

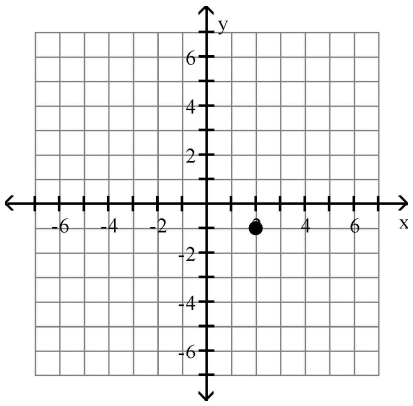


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C)

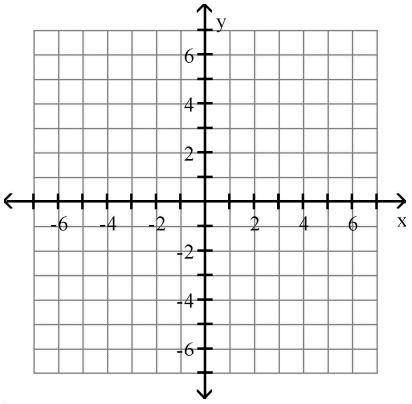


D)

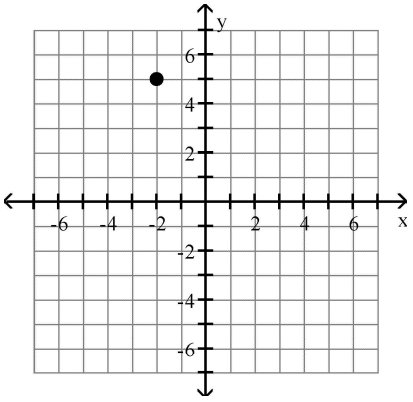


Answer: B

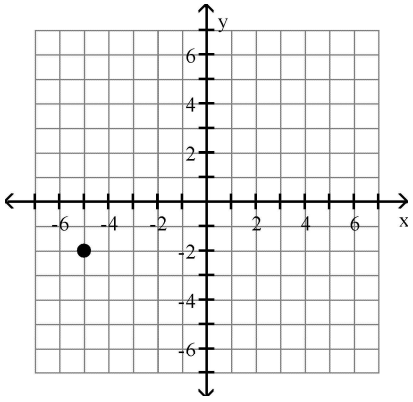
180) (5,–2)



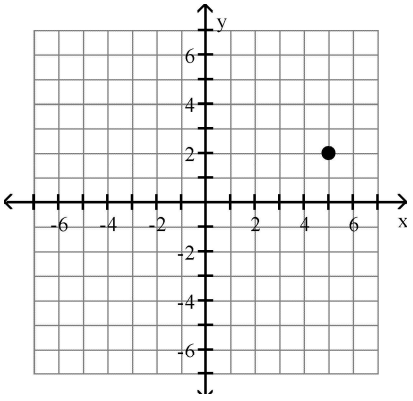
A)



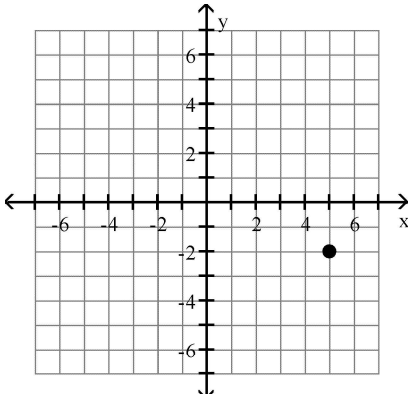
B)



C)



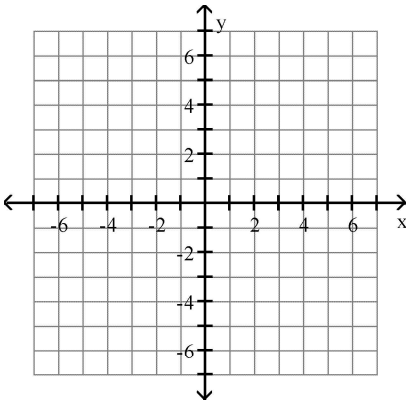
D)



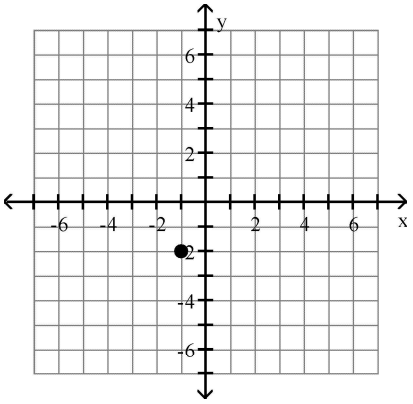
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Answer: D

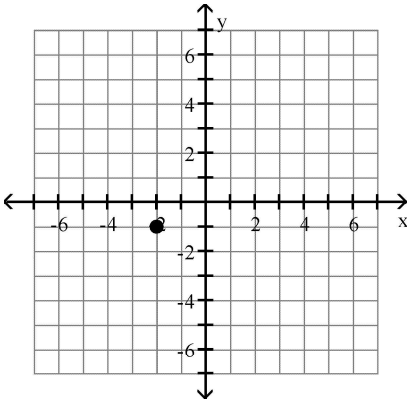
181) (–1,–2)



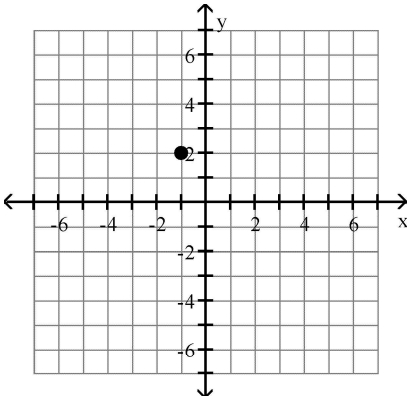
A)



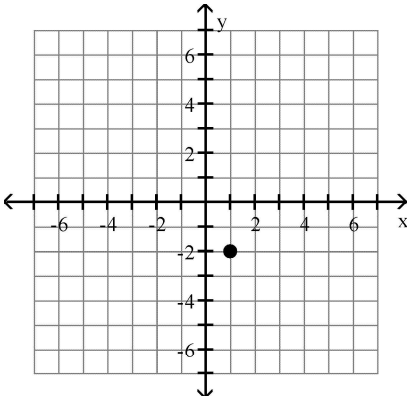
B)



C)



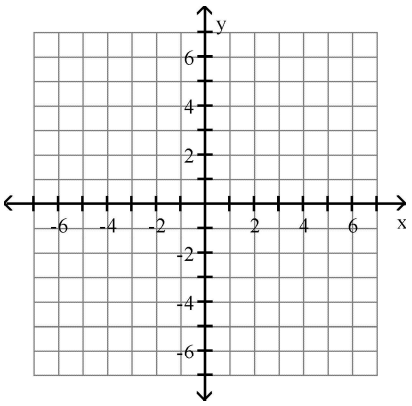
D)



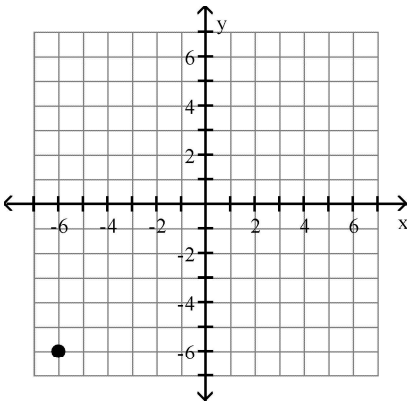
Answer: A

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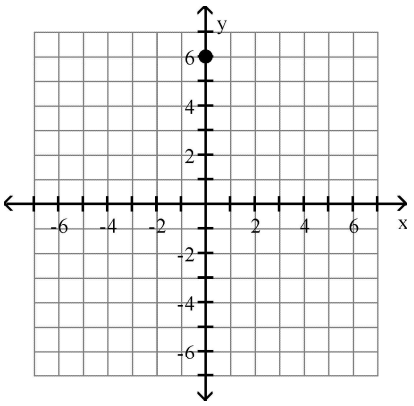
182) (0,–6)



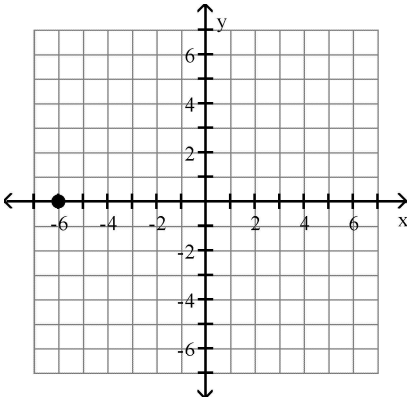
A)



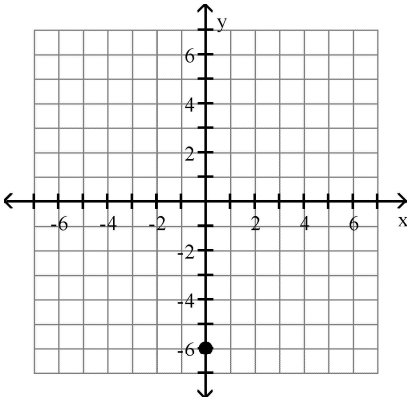
B)



C)

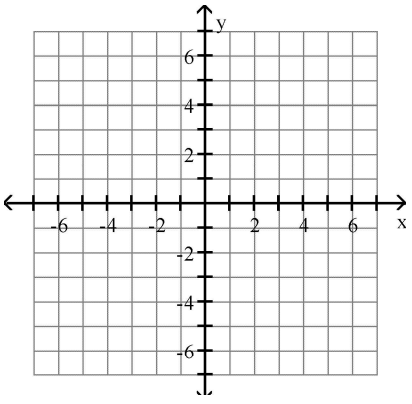


D)



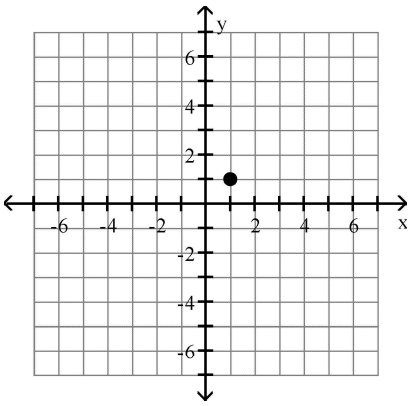
Answer: D

183) (1, 0)

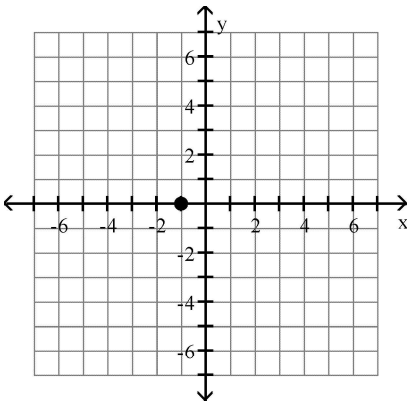


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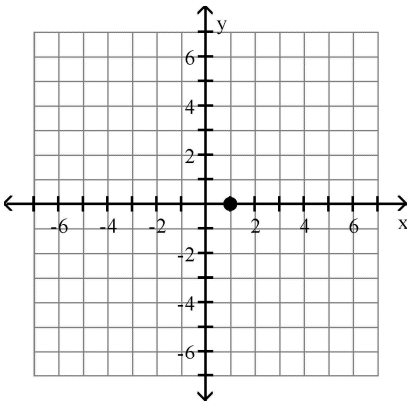
A)



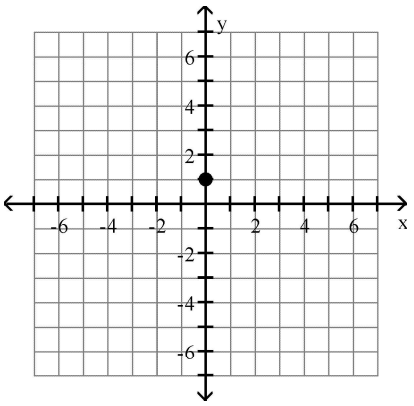
B)



C)



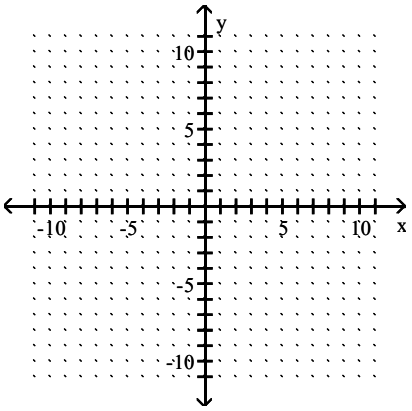
D)



Answer: C

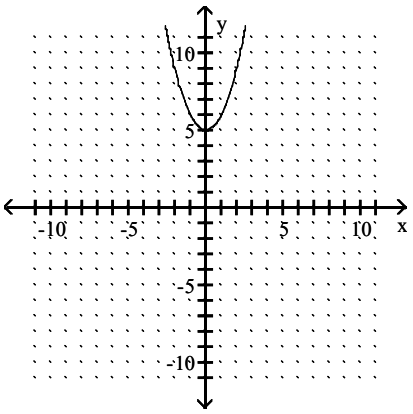
Graph the equation.

184) $y = x^2 + 5$

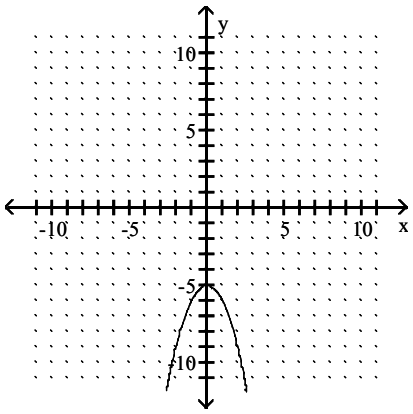


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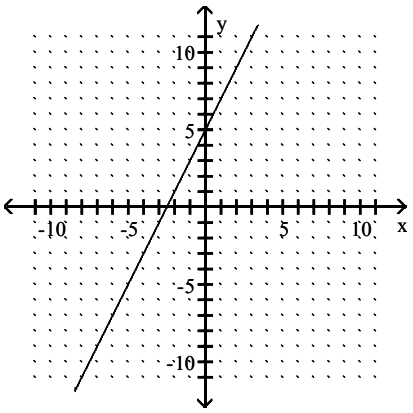
A)



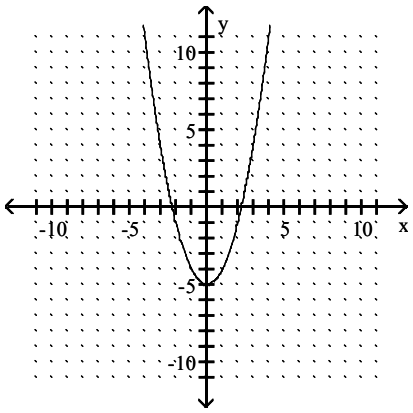
B)



C)

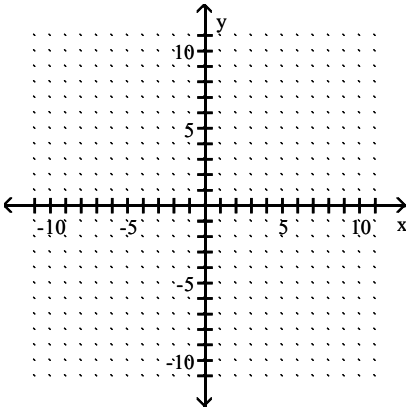


D)



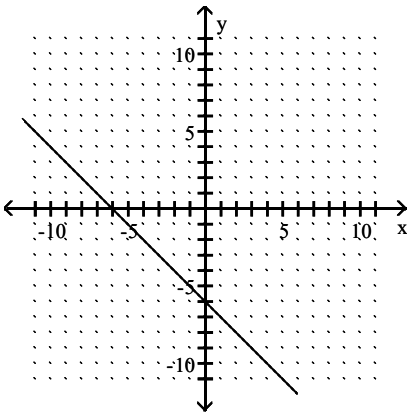
Answer: A

185) $y = x - 6$

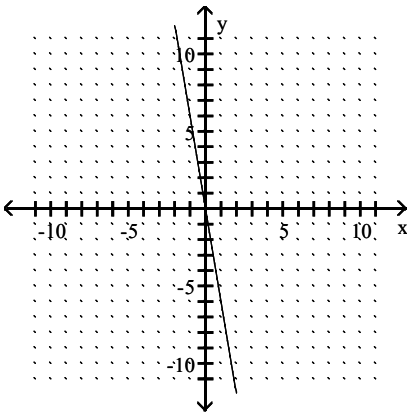


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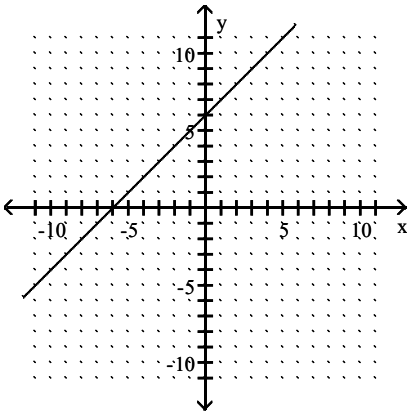
A)



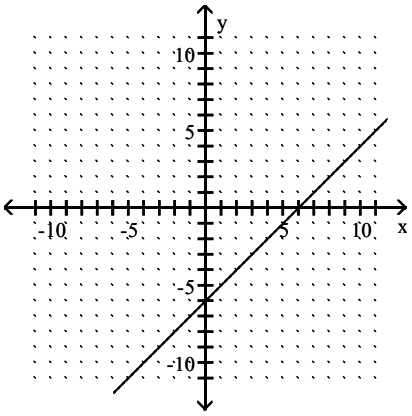
B)



C)

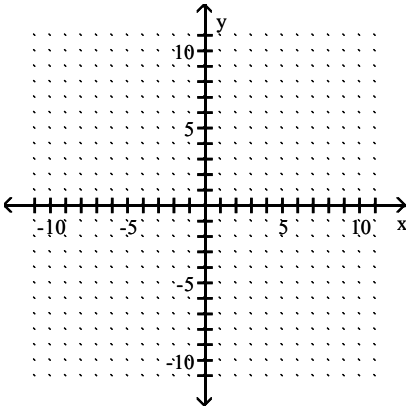


D)



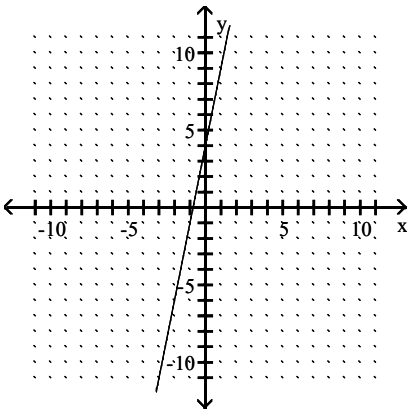
Answer: D

186) $y = -5x + 4$

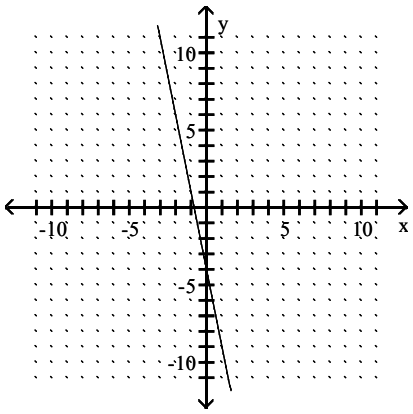


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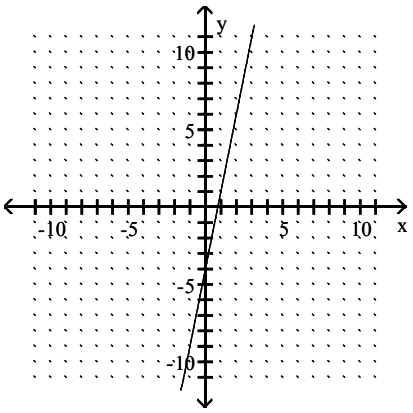
A)



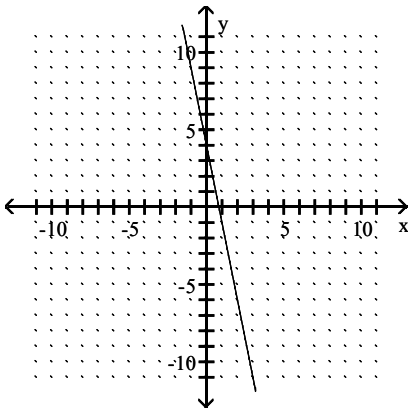
B)



C)

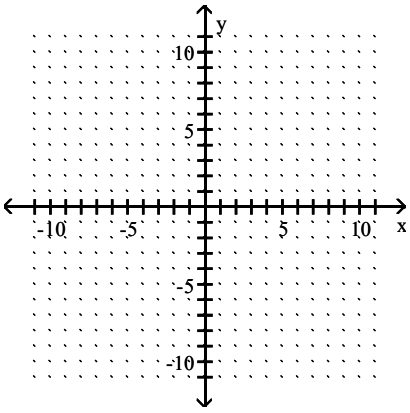


D)



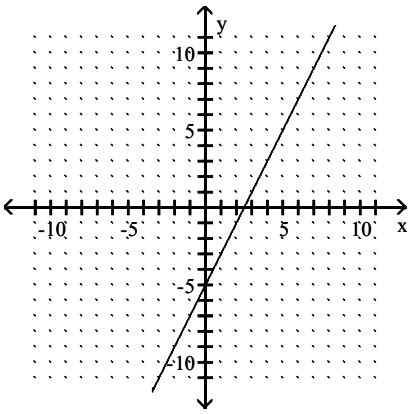
Answer: D

187) $y = \frac{1}{2}x - 5$

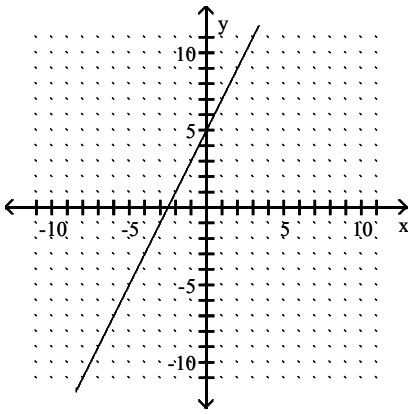


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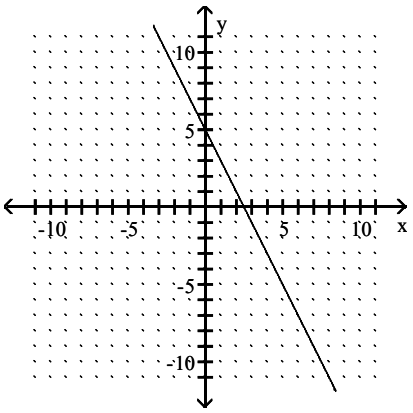
A)



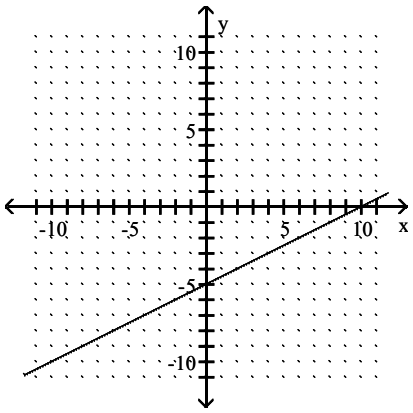
B)



C)

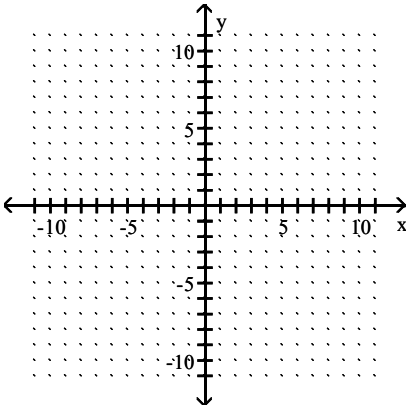


D)



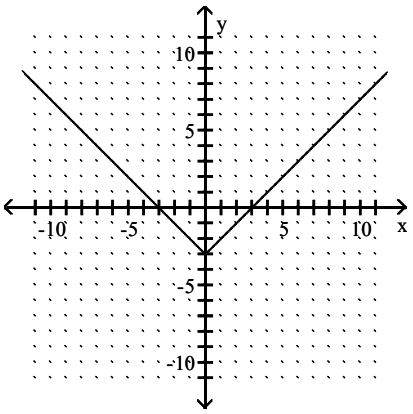
Answer: D

188) $y = |x| + 3$

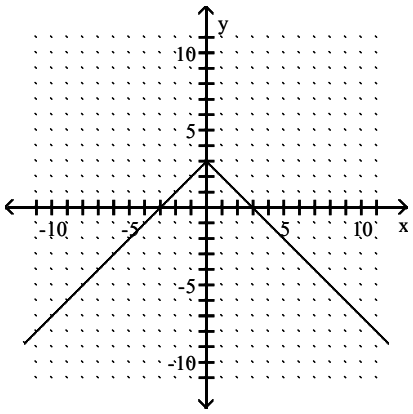


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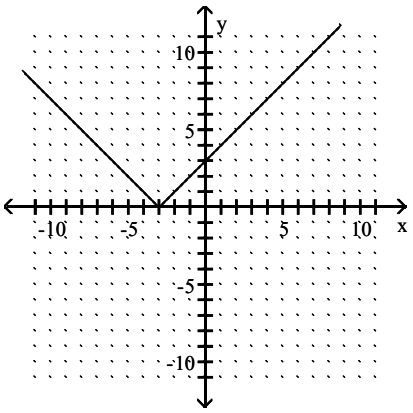
A)



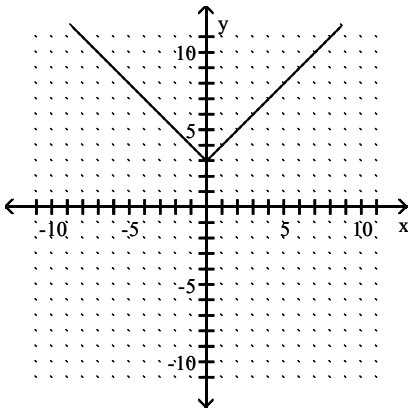
B)



C)

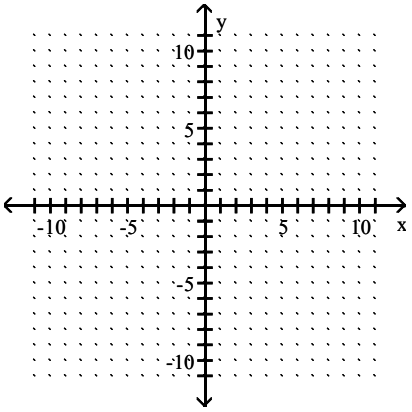


D)



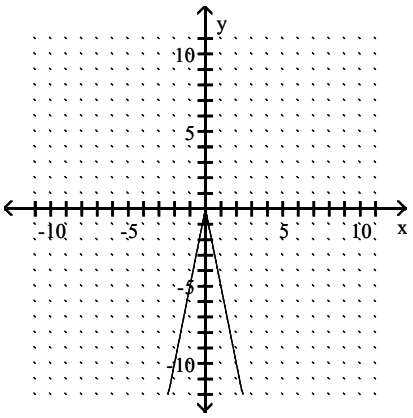
Answer: D

189) $y = -5|x|$

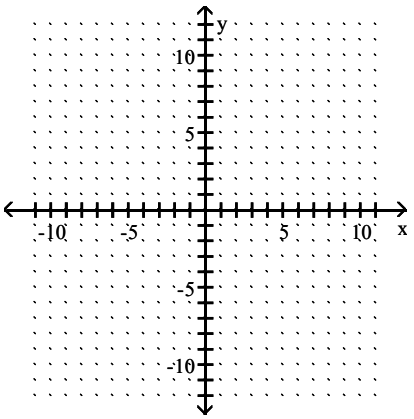


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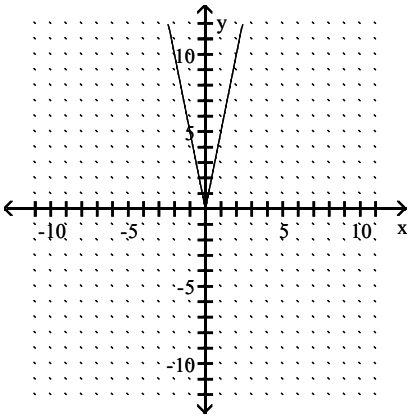
A)



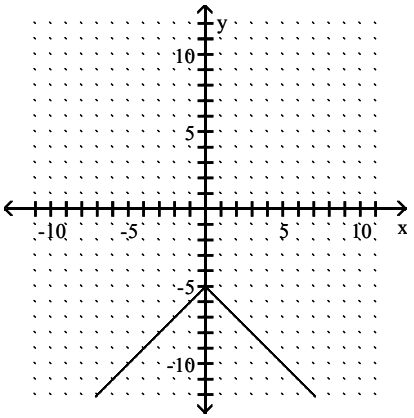
B)



C)

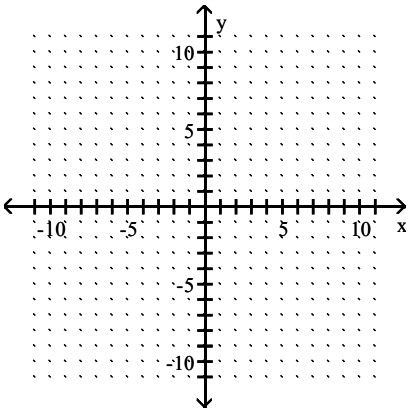


D)



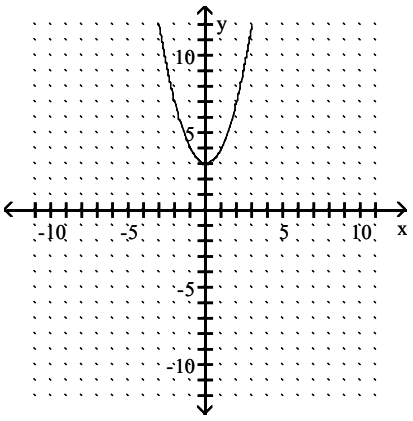
Answer: A

190) $y = \frac{1}{3}x^2$

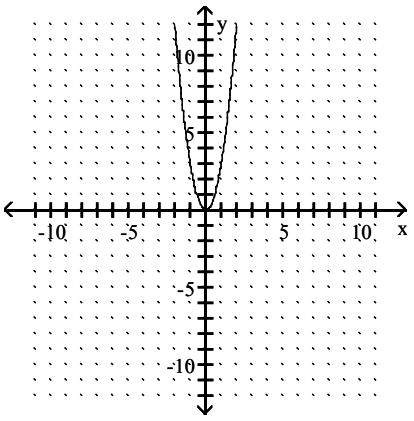


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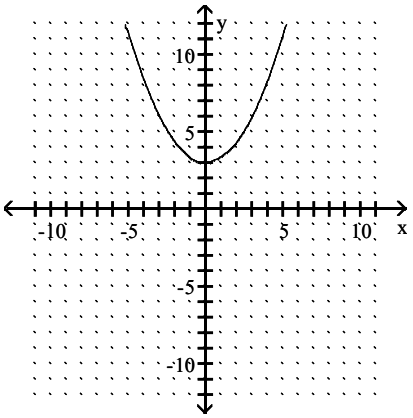
A)



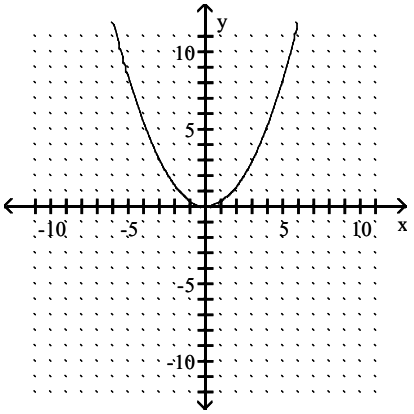
B)



C)

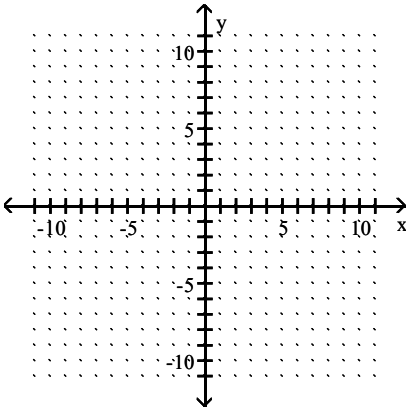


D)



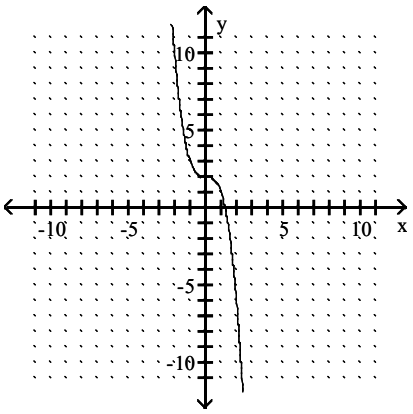
Answer: D

191) $y = x^3 + 2$

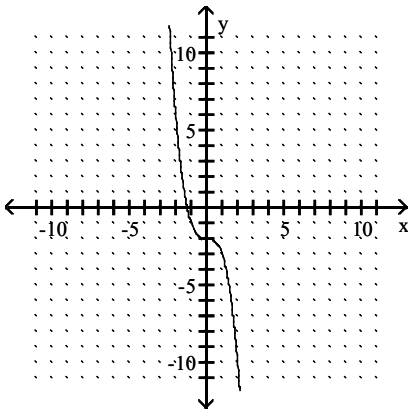


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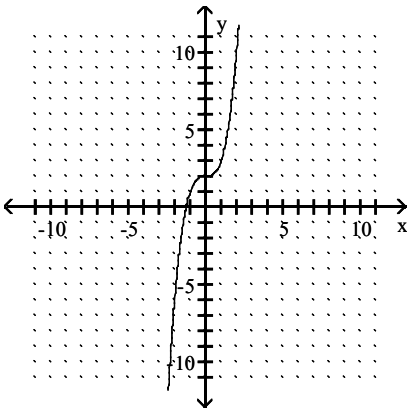
A)



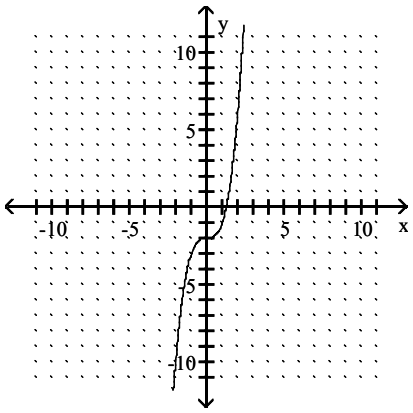
B)



C)

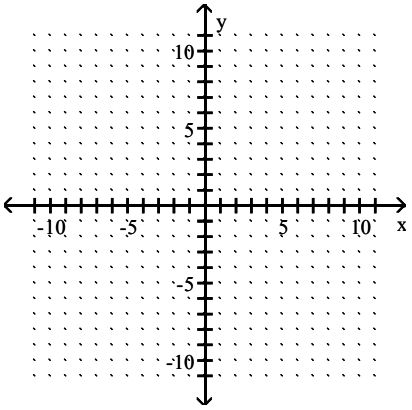


D)



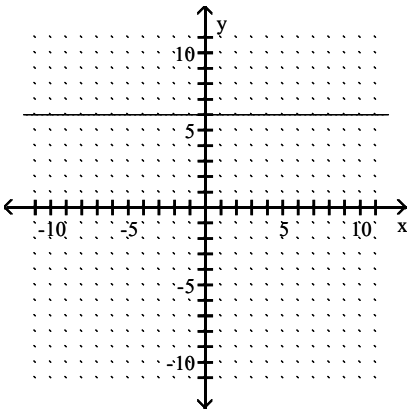
Answer: C

192) $y = 6$

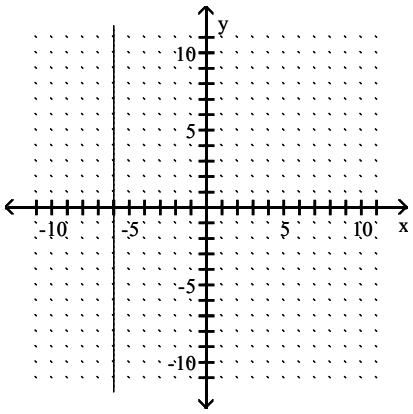


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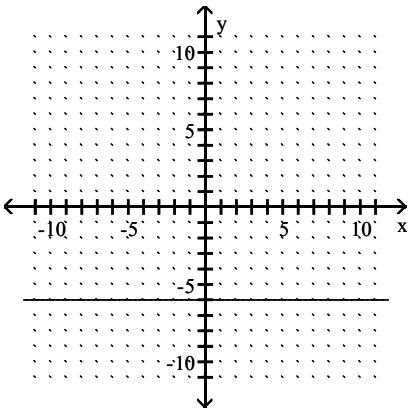
A)



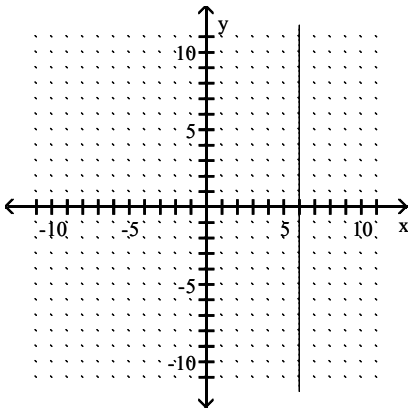
B)



C)

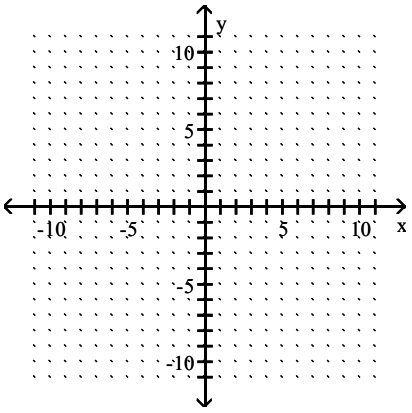


D)



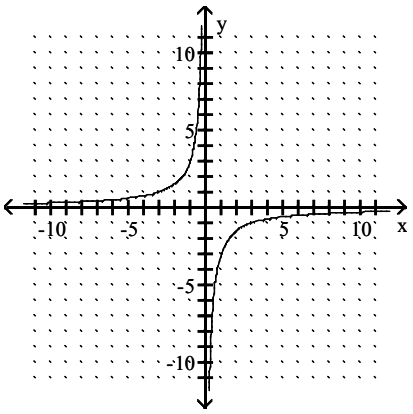
Answer: A

193) $y = \frac{1}{x}$

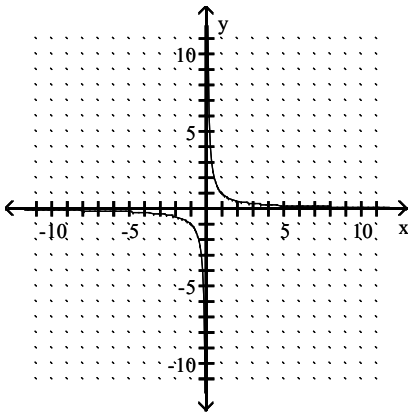


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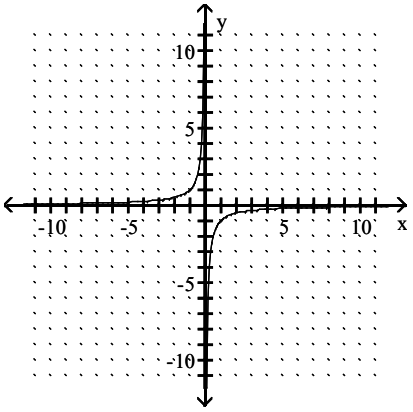
A)



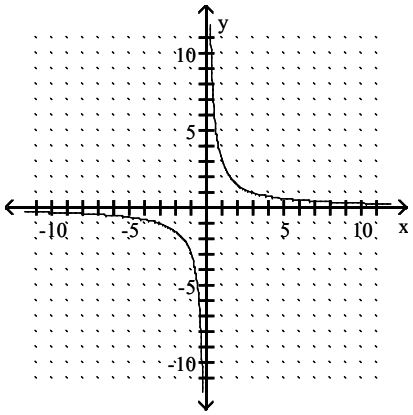
B)



C)

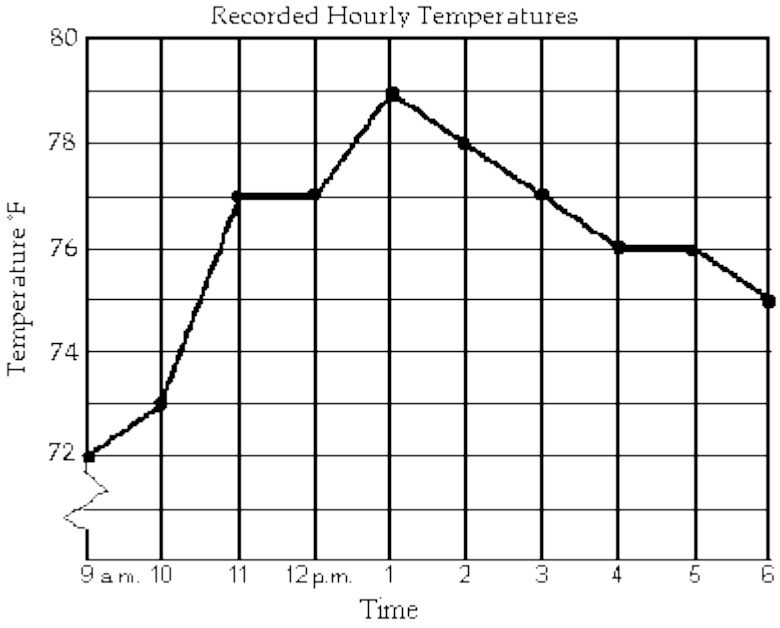


D)



Answer: B

The line graph shows the recorded hourly temperatures in degrees Fahrenheit at an airport.



194) At what time was the temperature the highest?

A) 1 p.m. B) 5 p.m. C) 2 p.m. D) 11 a.m.

Answer: A

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195) At what time was the temperature its lowest?

A) 4 p.m. B) 6 p.m. C) 9 a.m. D) 1 p.m.

Answer: C

196) What temperature was recorded at 9 a.m.?

A) 72 ° F B) 73 ° F C) 74 ° F D) 70 ° F

Answer: A

197) During which hour did the temperature increase the most?

A) 1 p.m. to 2 p.m. B) 12 p.m. to 1 p.m. C) 10 a.m. to 11 a.m. D) 9 a.m. to 10 a.m.

Answer: C

198) At what time was the temperature 73°?

A) 10 a.m. B) 5 p.m. C) 10 a.m. and 11 a.m. D) 4 p.m. and 5 p.m.

Answer: A

199) During which two hour period did the temperature increase the most?

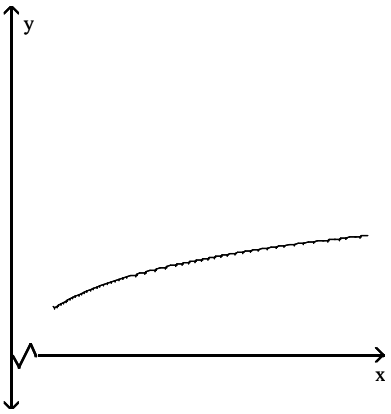
A) 10 a.m. to 12 p.m. B) 9 a.m. to 11 a.m. C) 10 a.m. to 11 a.m. D) 12 p.m. to 2 p.m.

Answer: B

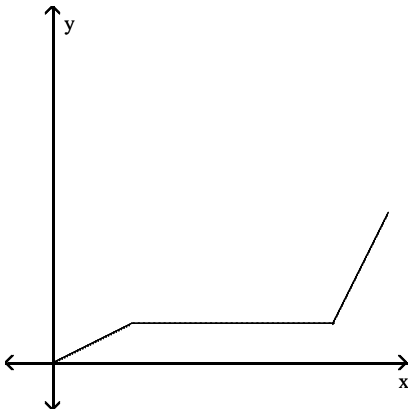
Match the story with the correct figure.

200) The amount of rainfall as a function of time, if the rain fell more and more softly.

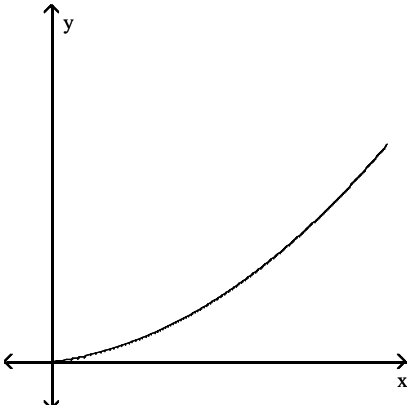
A)



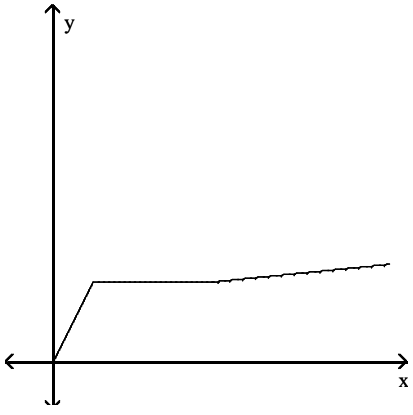
B)



C)



D)

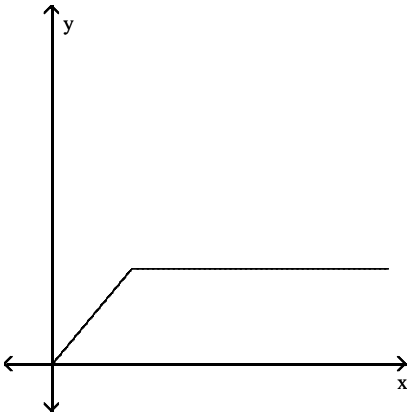


Answer: A

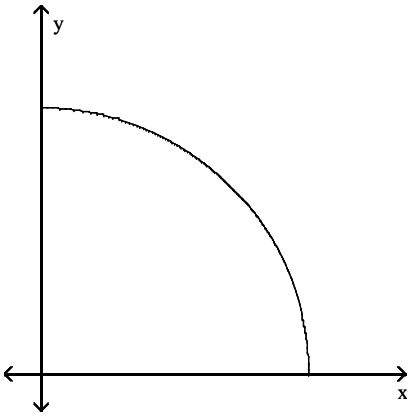
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201) The height of an animal as a function of time.

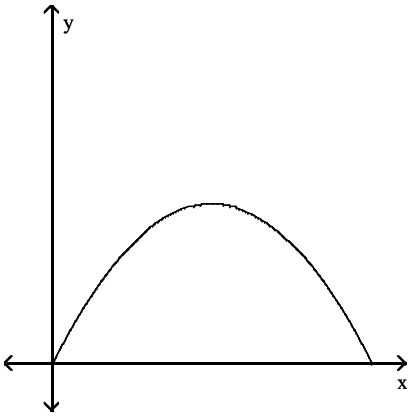
A)



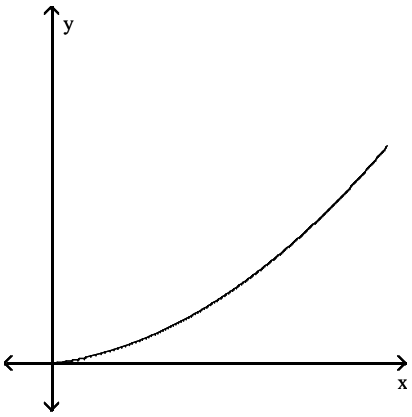
B)



C)



D)



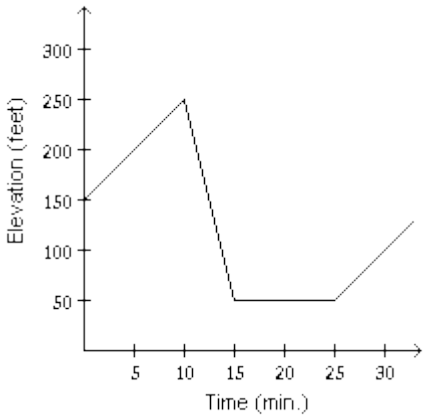
Answer: A

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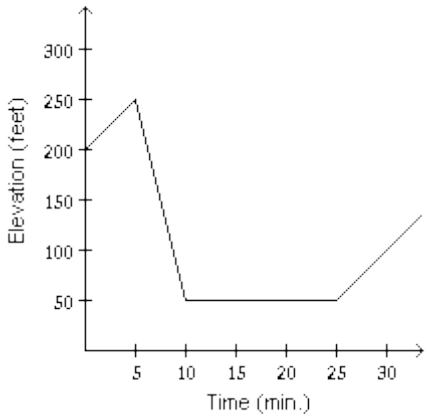
Solve the problem.

202) Mark started out by walking up a hill for 5 minutes. For the next 5 minutes he walked down a steep hill to an elevation lower than his starting point. For the next 10 minutes he walked on level ground. For the next 10 minutes he walked uphill. Determine which graph of elevation above sea level versus time illustrates the story.

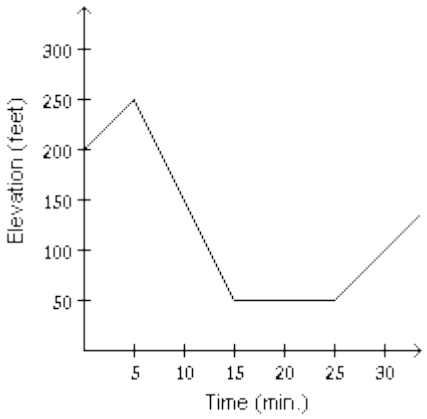
A)



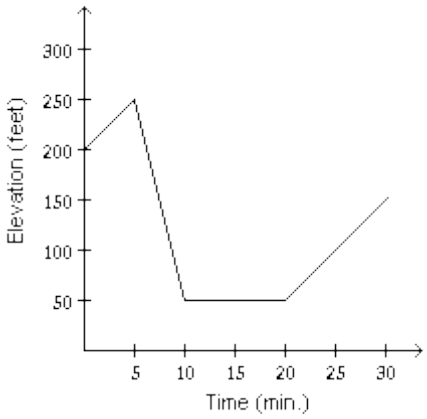
B)



C)



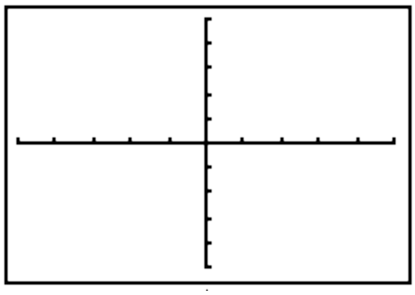
D)



Answer: D

Match the correct viewing rectangle dimensions with the figure.

203)

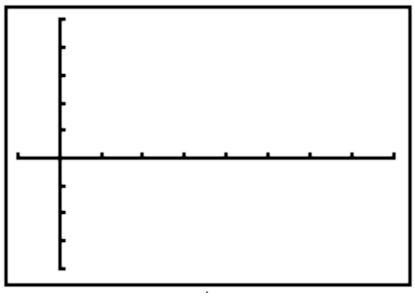


A) [–2, 2, 2] by [–2, 2, 2]
B) [–10, 10, 4] by [–10, 10, 4]
C) [–20, 10, 2] by [–20, 10, 2]
D) [–10, 10, 2] by [–10, 10, 2]

Answer: D

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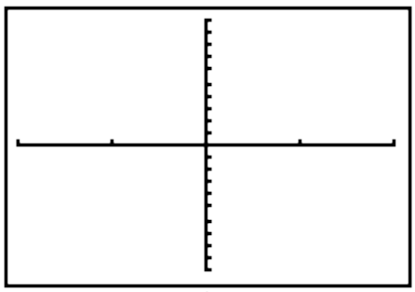
204)



A) [–2, 16, 2] by [–2, 16, 2]
B) [–20, 10, 2] by [–20, 10, 2]
C) [–8, 10, 2] by [–2, 16, 2]
D) [–2, 16, 2] by [–8, 10, 2]

Answer: D

205)



A) [–8, 8, 2] by [–2, 2, 1]
B) [–2, 2, 1] by [–40, 40, 4]
C) [–2, 2, 1] by [–2, 2, 1]
D) [–10, 10, 1] by [–10, 10, 1]

Answer: B

206)



A) [–10, 30, 10] by [–400, 500, 100]
B) [–10, 5, 1] by [–10, 5, 1]
C) [–1, 5, 1] by [–4, 8, 1]
D) [–1, 8, 1] by [–1, 8, 1]

Answer: A

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The table of values was generated by a graphing utility with a TABLE feature. Use the following table to solve.

X	Y_1	Y_2
–3	9	–3
–2	4	–1
–1	1	1
0	0	3
1	1	5
2	4	7
3	9	9

207) Which equation corresponds to Y_2 in the table?

A) $y_2 = x + 2$ B) $y_2 = 2 - 3x$ C) $y_2 = 2x - 3$ D) $y_2 = 2x + 3$

Answer: D

208) Does the graph of Y_2 pass through the origin?

A) Yes B) No

Answer: B

209) At which points do the graph of Y_1 and Y_2 intersect?

A) (–1, 1) and (0, 3) B) (0, 1) and (3, 9) C) (–1, 1) and (3, 9) D) (0, 3) and (0, 1)

Answer: C

210) For which values of x is $Y_1 = Y_2$?

A) –1 and 3 B) –1 and –2 C) –2 and 3 D) –2 and 2

Answer: A

Solve the equation.

211) $9x + 9 = 27$

A) {13} B) {2} C) {6} D) {9}

Answer: B

212) $10x - 2 = 38$

A) {4} B) {5} C) {30} D) {34}

Answer: A

213) $9x - (-4x - 4) = 6$

A) $\left\{-\frac{13}{2}\right\}$ B) $\left\{\frac{1}{2}\right\}$ C) $\left\{\frac{2}{13}\right\}$ D) $\left\{\frac{13}{2}\right\}$

Answer: C

214) $-2x - 2 = -10 + 2x$

A) $\left\{\frac{1}{2}\right\}$ B) $\{2\}$ C) $\{0\}$ D) $\left\{-\frac{1}{2}\right\}$

Answer: B

215) $5 = -7(x + 5) - (-8x - 7)$

A) {33} B) {7} C) {– 33} D) {– 23}

Answer: A

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216) $8y + 4(4 + y) = 3(y - 7) + 10y$

A) {–11} B) {–37} C) {37} D) {11}

Answer: C

217) $\frac{x}{3} = \frac{x}{10} + \frac{7}{3}$

A) $\{10\}$ B) $\left\{\frac{1}{10}\right\}$ C) {0} D) $\left\{-\frac{7}{3}\right\}$

Answer: A

218) $\frac{x}{7} - \frac{x}{9} = 8$

A) {56} B) $\{252\}$ C) {63} D) {72}

Answer: B

219) $\frac{x + 7}{5} = \frac{19}{15} - \frac{x - 3}{6}$

A) {38} B) {0} C) {1} D) $\{17\}$

Answer: C

220) $-\frac{1}{5}(x + 15) - \frac{1}{6}(x - 6) = x + 6$

A) $\left\{-\frac{300}{41}\right\}$ B) $\left\{-\frac{120}{41}\right\}$ C) $\left\{-\frac{240}{41}\right\}$ D) $\left\{-\frac{60}{41}\right\}$

Answer: C

221) $21 - x = [8 - (6 - 12)] - (3 - 5)^3$

A) {15} B) {–1} C) {27} D) {–15}

Answer: B

222) $[-6(7 - 8)^3 - (-8)] = -2x$

A) {–9} B) {–3} C) {1} D) {–7}

Answer: D

223) $[3 + (-5)^2 + 6 \cdot 6] \div (8 - 6) = 6x$

A) {0} B) $\left\{\frac{19}{7}\right\}$ C) {2} D) $\left\{\frac{16}{3}\right\}$

Answer: D

224) $-5(x - 5) - 119 = 3x - 8(x + 8 \div 1.1)$

A) $(-\infty, \infty)$ B) {–55} C) {–183} D) $\varnothing$

Answer: D

225) $-3(x - 5) - [40 \div 2(4 + 7^3) + 4x] = -7(x - 7)$

A) $\varnothing$ B) {4} C) {7} D) $(-\infty, \infty)$

Answer: A

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226) $0.50x - 0.40(80 + x) = -0.35(80)$

A) {40} B) {20} C) {30} D) {50}

Answer: A

227) $-0.02y + 0.14(8000 - y) = 0.34y$

A) {6720} B) {2240} C) {560} D) {5600}

Answer: B

228) $2\{12 - [5x - (6x - 2)]\} = 24 - 7(x - 2)$

A) {2} B) $\left\{-\frac{10}{9}\right\}$ C) {–2} D) $\left\{\frac{10}{9}\right\}$

Answer: A

229) $2\{1 - [5(k + 3) - 4(k + 3)]\} = -3k$

A) $\left\{\frac{2}{3}\right\}$ B) $\left\{\frac{1}{2}\right\}$ C) $\{-3\}$ D) {4}

Answer: D

230) $-\{5(d + 2) - 6[3d - 2(3d + 8)] - 7\} = -18d + 101$

A) {45} B) {–40} C) $\left\{\frac{200}{41}\right\}$ D) $\left\{\frac{15}{2}\right\}$

Answer: B

Evaluate.

231) Evaluate $x^2 + 3x$ for the value of x satisfying $5(x + 4) + -34 = 5x - 2(4 - x)$.

A) –36 B) 4 C) 0 D) –2

Answer: C

232) Evaluate $x^2 - (xy - y)$ for x satisfying $\frac{7(x - 2)}{6} = 2x - 4$ and y satisfying $-5y + 30 = 5y + 10$.

A) 3 B) –2 C) 5 D) 2

Answer: D

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Use the Y = screen to write the equation being solved. Then use the table to solve the equation.

233)

Plot1 Plot2 Plot3
\Y1 = 3 (X + 3)
\Y2 = 3 (–25 – 6 X)
\Y3 =
\Y4 =
\Y5 =
\Y6 =
\Y7 =

X	Y1	Y2
–8	–15	69
–7	–12	51
–6	–9	33
–5	–6	15
–4	–3	–3
–3	0	–21
–2	3	–39

X = –8

A) 3(x + 3) + 3(–25 – 6x) = 0; {–8}
B) 3(x + 3) = 3(–25 – 6x); {–8}
C) 3(x + 3) + 3(–25 – 6x) = 0; {–4}
D) 3(x + 3) =3(–25 – 6x); {–4}

Answer: D

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234)

Plot1 Plot2 Plot3
\Y1 = 2 (3X + 4)
\Y2 = 16X + 16
\Y3 =
\Y4 =
\Y5 =
\Y6 =
\Y7 =

X	Y1	Y2
–1	2	0
–.9	2.6	–28.8
–.8	3.2	–25.6
–.7	3.8	–22.4
–.6	4.4	–19.2
–.5	5	–16
–.4	5.6	–12.8

X = –1

A) 2(3x + 4) = 16x + 16; {–0.8}
B) 2(3x + 4) + 16x + 16 = 0; {–0.8}
C) 2(3x + 4) = 16x + 16; {–1}
D) 2(3x + 4) + 16x + 16 = 0; {–1}

Answer: A

Solve the equation to determine whether the equation is an identity, a conditional equation, or an inconsistent equation.

235) 4(x + 6) = 4x + 24
A) Identity
B) Conditional equation
C) Inconsistent equation

Answer: A

236) 5(x + 4) + 18 = 7x – 2(x + 9)
A) Identity
B) Conditional equation
C) Inconsistent equation

Answer: C

237) 7x + 3(–3x – 5) = –14 – 3x
A) Identity
B) Conditional equation
C) Inconsistent equation

Answer: B

238) $\frac{-7x + 5}{7} + \frac{8}{7} = -\frac{6x}{7}$
A) Identity
B) Conditional equation
C) Inconsistent equation

Answer: B

239) 20x + 13(x + 1) = 33(x + 1) – 20
A) Identity
B) Conditional equation
C) Inconsistent equation

Answer: A

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240) $6x + 6 + 3x + 8 = 6x + 3x + 11$

A) Identity B) Conditional equation C) Inconsistent equation

Answer: C

Solve.

241) A certain store has a fax machine available for use by its customers. The store charges $2.15 to send the first page and $0.60 for each subsequent page. The total price, P, for the faxing x pages can be modeled by the formula $P = 0.60(x - 1) + 2.15$. Determine the number of pages that can be faxed for $5.75.

A) 3 pages B) 49 pages C) 10 pages D) 7 pages

Answer: D

242) A car rental agency charges $250 per week plus $0.20 per mile to rent a car. The total cost, C, for the renting the car for one week and driving it x miles can be modeled by the formula $C = 0.20x + 250$. How many miles can you travel in one week for $290?

A) 1450 miles B) 175 miles C) 200 miles D) 308 miles

Answer: C

243) The equation $V = -2000t + 21{,}000$ describes the value in dollars of a certain model of car after it is t years old. If a car is worth $11,000, find the age of the car.

A) 5 years B) 6 years C) 4 years D) 7 years

Answer: A

244) The formula $N = 4x^2 + 6x + 3$ represents the number of households in a certain city, N, in thousands, that have a computer, x years after 2005. According to the formula, in what year were there 91,000 households with computers in this city?

A) 2007 B) 2009 C) 2010 D) 2008

Answer: B

245) The formula $F = 0.02x^2 + 15$ models the percentage of female tenured faculty, F, at State University, x years after 2010. According to the formula, in what year will the percentage of female tenured faculty reach 28.52?

A) 2036 B) 2038 C) 2037 D) 2035

Answer: A

Use the five–step strategy for solving word problems to find the number or numbers described in the following exercise.

246) When four times a number is added to 8 times the number, the result is 36. What is the number?

A) –4.5 B) 3 C) 1 D) 4.5

Answer: B

247) When 2 times a number is subtracted from 7 times the number, the result is 45. What is the number?

A) 5 B) –9 C) 9 D) 3.1

Answer: C

248) When a number is decreased by 20% of itself, the result is 672. What is the number?

A) 168 B) 4200 C) 840 D) 2

Answer: C

249) When 90% of a number is added to the number, the result is 95. What is the number?

A) 190 B) 47 C) 45 D) 50

Answer: D

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250) 30% of what number is 84?
A) 28 B) 280 C) 2800 D) 25.2
Answer: B

251) One number exceeds another by –8. The sum of the numbers is –6. What are the numbers?
A) 7 and 2 B) –8 and 2 C) –7 and 1 D) No solution
Answer: C

Solve the problem.

252) During a road trip, Tony drove one–third the distance that Lana drove. Mark drives 15 more miles than Lana drove. The total distance they drove on the trip was 253 miles. How many miles did each person drive?
A) Tony drove 29 miles, Lana drove 87 miles, and Mark drove 102 miles.
B) Tony drove 306 miles, Lana drove 102 miles, and Mark drove 87 miles.
C) Tony drove 102 miles, Lana drove 306 miles, and Mark drove 321 miles.
D) Tony drove 34 miles, Lana drove 102 miles, and Mark drove 117 miles.
Answer: D

253) The sum of the angles of a triangle is 180°. Find the three angles of the triangle if one angle is twice the smallest angle and the third angle is 36° greater than the smallest angle.
A) 18°, 36°, 126° B) 36°, 72°, 72° C) 29°, 58°, 93° D) 18°, 54°, 108°
Answer: B

254) In a recent International Gymnastics competition, the U.S., China, and Romania were the big winners. If the total number of medals won by each team are three consecutive integers whose sum is 39 and the U.S. won more than China who won more than Romania, how many medals did each team win?
A) U.S.: 12 medals; China: 11 medals; Romania: 10 medals
B) U.S.: 15 medals; China: 14 medals; Romania: 13 medals
C) U.S.: 41 medals; China: 40 medals; Romania: 39 medals
D) U.S.: 14 medals; China: 13 medals; Romania: 12 medals
Answer: D

255) Andrea is having her yard landscaped. She obtained an estimate from two landscaping companies. Company A gave an estimate of $210 for materials and equipment rental plus $60 per hour for labor. Company B gave and estimate of $330 for materials and equipment rental plus $45 per hour for labor. Determine how many hours of labor will be required for the two companies to cost the same.
A) 11 hr B) 7 hr C) 12 hr D) 8 hr
Answer: D

256) After a 13% price reduction, a boat sold for $25,230. What was the boat's price before the reduction? (Round to the nearest cent, if necessary.)
A) $28,509.90 B) $29,000 C) $3279.90 D) $194,076.92
Answer: B

257) Inclusive of a 6.3% sales tax, a diamond ring sold for $3189.00. Find the price of the ring before the tax was added. (Round to the nearest cent, if necessary.)
A) $2988.09 B) $3000 C) $3389.91 D) $200.91
Answer: B

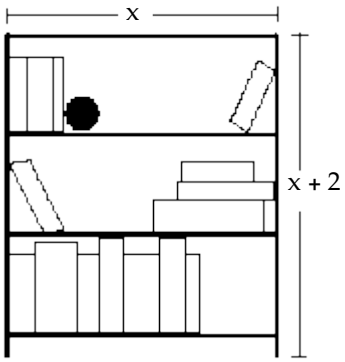
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258) The length of a rectangular room is 2 feet longer than twice the width. If the room's perimeter is 136 feet, what are the room's dimensions?

A) Width = 44 ft; length = 92 ft
B) Width = 33 ft; length = 35 ft
C) Width = 27 ft; length = 56 ft
D) Width = 22 ft; length = 46 ft

Answer: D

259) A bookcase is to be constructed as shown in the figure below. The height of the bookcase is 2 feet longer than the length of a shelf. If 22 feet of lumber is used for the entire unit (including the shelves, but NOT the back of the bookcase), find the length and height of the unit.



A) Length = 10.0 ft; height = 13.5 ft
B) Length = 4.5 ft; height = 6.5 ft
C) Length = 3 ft; height = 5 ft
D) Length = 3 ft; height = 6 ft

Answer: C

260) An auto repair shop charged a customer $564 to repair a car. The bill listed $64 for parts and the remainder for labor. If the cost of labor is $50 per hour, how many hours of labor did it take to repair the car?

A) 9 hr
B) 10.5 hr
C) 10 hr
D) 11 hr

Answer: C

261) Sergio's internet provider charges its customers $8 per month plus 4¢ per minute of on–line usage. Sergio received a bill from the provider covering a 5–month period and was charged a total of $55.20. How many minutes did he spend on–line during that period? (Round to the nearest whole minute, if necessary.)

A) 838 min
B) 913 min
C) 380 min
D) 38 min

Answer: C

Solve the formula for the specified variable.

262) $d = rt$ for t

A) $t = \frac{r}{d}$
B) $t = \frac{d}{r}$
C) $t = d - r$
D) $t = dr$

Answer: B

263) $A = \frac{1}{2}bh$ for b

A) $b = \frac{Ah}{2}$
B) $b = \frac{2A}{h}$
C) $b = \frac{h}{2A}$
D) $b = \frac{A}{2h}$

Answer: B

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264) $V = \frac{1}{3}Bh$ for h

A) $h = \frac{V}{3B}$ B) $h = \frac{B}{3V}$ C) $h = \frac{3V}{B}$ D) $h = \frac{3B}{V}$

Answer: C

265) $P = 2L + 2W$ for L

A) $L = P - W$ B) $L = \frac{P - 2W}{2}$ C) $L = P - 2W$ D) $L = \frac{P - W}{2}$

Answer: B

266) $S = 2\pi rh + 2\pi r^2$ for h

A) $h = \frac{S}{2\pi r} - 1$ B) $h = 2\pi(S - r)$ C) $h = \frac{S - 2\pi r^2}{2\pi r}$ D) $h = S - r$

Answer: C

267) $P = s_1 + s_2 + s_3$ for s_3

A) $s_3 = s_1 + s_2 - P$ B) $s_3 = P - s_1 - s_2$ C) $s_3 = s_1 + P - s_2$ D) $s_3 = P + s_1 + s_2$

Answer: B

268) $F = \frac{9}{5}C + 32$ for C

A) $C = \frac{5}{9}(F - 32)$ B) $C = \frac{5}{F - 32}$ C) $C = \frac{F - 32}{9}$ D) $C = \frac{9}{5}(F - 32)$

Answer: A

269) $I = \frac{nE}{nr + R}$ for n

A) $n = \frac{-R}{Ir - E}$ B) $n = \frac{-IR}{Ir - E}$ C) $n = \frac{IR}{Ir + E}$ D) $n = IR(Ir - E)$

Answer: B

270) $A = P(1 + nr)$ for r

A) $r = \frac{Pn}{A - P}$ B) $r = \frac{A}{n}$ C) $r = \frac{P - A}{Pn}$ D) $r = \frac{A - P}{Pn}$

Answer: D

271) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1

A) $b_1 = \frac{A - hb_2}{2h}$ B) $b_1 = \frac{hb_2 - 2A}{h}$ C) $b_1 = \frac{2A - hb_2}{h}$ D) $b_1 = \frac{b_2 2A - h}{h}$

Answer: C

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Multiply the expression using the product rule.

272) $x^5 \cdot x^2$

A) $10x$ B) x^{10} C) x^7 D) $7x$

Answer: C

273) $y \cdot y^9$

A) $2y^9$ B) y^9 C) $2y^{10}$ D) y^{10}

Answer: D

274) $6^2 \cdot 6^6$

A) 36^{12} B) 6^{12} C) 36^8 D) 6^8

Answer: D

275) $(4p^7)(5p^5)$

A) $-20p^{35}$ B) $-20p^{12}$ C) $20p^{35}$ D) $20p^{12}$

Answer: D

276) $(-2x^4y)(-9x^6y^5)$

A) $-11x^{10}y^5$ B) $18x^{10}y^6$ C) $-18x^{10}y^5$ D) $18x^{24}y^5$

Answer: B

Divide the expression using the quotient rule.

277) $\frac{x^{13}}{x^6}$

A) x^7 B) x^3 C) x^{19} D) $\frac{1}{x^7}$

Answer: A

278) $\frac{-15x^{13}}{3x^6}$

A) x^6 B) $-5x^7$ C) x^7 D) $-5x^6$

Answer: B

279) $\frac{x^{11}y^{12}}{x^5y^2}$

A) xy^{10} B) x^5y^{10} C) x^5y^9 D) x^6y^{10}

Answer: D

280) $\frac{21x^{10}y^8}{7x^6y^5}$

A) $3x^4y^3$ B) $3x^3y^2$ C) x^4y^3 D) $3x^3y^4$

Answer: A

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281) $\frac{36x^{12}y^{11}z^7}{9x^6y^6z^6}$

A) $4x^6y^5$ B) x^6y^5z C) $4x^5y^4z$ D) $4x^6y^5z$

Answer: D

Use the zero exponent rule to simplify the expression.

282) 11^0

A) 1 B) 0 C) 11 D) –1

Answer: A

283) $(-2)^0$

A) 1 B) 2 C) 0 D) –1

Answer: A

284) -11^0

A) 0 B) 11 C) –1 D) 1

Answer: C

285) $-10y^0$

A) 0 B) –10 C) 1 D) –9

Answer: B

286) $(7b)^0$

A) 7 B) 1 C) 0 D) b

Answer: B

Write the expression with positive exponents only. Then simplify, if possible.

287) 5^{-2}

A) –25 B) 25 C) $\frac{1}{25}$ D) $\frac{1}{10}$

Answer: C

288) $(-5)^{-2}$

A) $-\frac{1}{25}$ B) –25 C) 25 D) $\frac{1}{25}$

Answer: D

289) -3^{-2}

A) –9 B) $\frac{1}{6}$ C) 9 D) $-\frac{1}{9}$

Answer: D

290) x^2y^{-2}

A) $y^{12}x^2$ B) $\frac{x^2}{y^{12}}$ C) $\frac{x^2}{y^2}$ D) y^2x^2

Answer: C

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291) $2x^{-9}y^4$

A) $\frac{2}{x^9y^4}$ B) $\frac{2x^9}{y^4}$ C) $\frac{2y^4}{x^9}$ D) $\frac{y^4}{2x^9}$

Answer: C

292) $\frac{1}{5^{-4}}$

A) 625 B) $-\frac{1}{625}$ C) – 625 D) $\frac{1}{625}$

Answer: A

293) $\frac{1}{-5^{-4}}$

A) 625 B) – 625 C) $\frac{1}{625}$ D) $-\frac{1}{625}$

Answer: B

294) $\frac{x^{-6}}{y^{-7}}$

A) $\frac{x^6}{y^7}$ B) $\frac{y^7}{x^6}$ C) x^6y^7 D) $\frac{1}{x^6y^7}$

Answer: B

295) $\frac{x^3y^{-7}}{z^{-2}}$

A) $\frac{x^3z^2}{y^7}$ B) $\frac{z^2}{x^3y^7}$ C) $\frac{x^3z^7}{y^2}$ D) $\frac{y^7}{x^3z^2}$

Answer: A

Simplify the expression using the power rule.

296) $(x^2)^8$

A) x^{16} B) $8x^{16}$ C) $8x^2$ D) x^{10}

Answer: A

297) $(x^7)^{-6}$

A) $\frac{1}{x^{42}}$ B) $-6x^{42}$ C) $-x^{42}$ D) $-6x^7$

Answer: A

298) $(4^2)^6$

A) $6 \cdot 4^{12}$ B) 4^8 C) 4^{12} D) $6 \cdot 4^2$

Answer: C

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299) $(5^{-5})^{-3}$

A) 5^{15} B) $\frac{1}{5^8}$ C) 5^8 D) $\frac{1}{5^{15}}$

Answer: A

Simplify the expression using the products to powers rule.

300) $(2a)^3$

A) $8a^3$ B) $6a^3$ C) $6a$ D) $8a$

Answer: A

301) $(-5a)^2$

A) $-10a^2$ B) $-10a$ C) $25a$ D) $25a^2$

Answer: D

302) $(-2xy)^5$

A) $-32x^5y^5$ B) $-10x^5y^5$ C) $-10xy$ D) $-32xy$

Answer: A

303) $(-4pqr)^3$

A) $-64pqr$ B) $-12p^3q^3r^3$ C) $-12pqr$ D) $-64p^3q^3r^3$

Answer: D

304) $(x^8y)^3$

A) $x^{24}y^3$ B) $x^{11}y^4$ C) $x^{11}y$ D) $x^{24}y$

Answer: A

305) $(x^{-3}y^5)^{-1}$

A) $\frac{y^4}{x^{-4}}$ B) $\frac{x^{-4}}{y^4}$ C) $\frac{x^3}{y^5}$ D) $\frac{1}{x^3y^5}$

Answer: C

306) $(3x^{-1}y^7z^{-8})^{-2}$

A) $\frac{y^9}{9x^3z^{10}}$ B) $\frac{y^9}{-6x^3z^{10}}$ C) $\frac{x^2z^{16}}{9y^{14}}$ D) $\frac{x^2z^{16}}{-6y^{-14}}$

Answer: C

Simplify the expression using the quotients–to–powers rule.

307) $\left(\frac{a}{7}\right)^2$

A) $\frac{a^2}{49}$ B) $\frac{a^2}{7}$ C) $\frac{a}{7}$ D) $\frac{a^3}{343}$

Answer: A

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308) $\left(\frac{p^3}{2}\right)^4$

A) $\frac{p^{12}}{2}$ B) $\frac{p^{12}}{16}$ C) $\frac{p^7}{16}$ D) $\frac{p^7}{2}$

Answer: B

309) $\left(\frac{-3p}{q}\right)^3$

A) $\frac{-9p}{q}$ B) $\frac{-27p}{q^3}$ C) $\frac{-27p^3}{q^3}$ D) $\frac{-9p^3}{q^3}$

Answer: C

310) $\left(\frac{m^3}{q^4}\right)^4$

A) $\frac{m^{12}}{q^{16}}$ B) $\frac{m^{12}}{q^8}$ C) $\frac{m^7}{q^8}$ D) $\frac{m^7}{q^{16}}$

Answer: A

311) $\left(\frac{x^{-4}}{y^6}\right)^{-4}$

A) $\frac{x^{-8}}{y^2}$ B) $\frac{1}{x^{16}y^{24}}$ C) $\frac{y^2}{x^{-8}}$ D) $x^{16}y^{24}$

Answer: D

312) $\left(\frac{3p^4v^4}{s^3}\right)^4$

A) $\frac{3p^{16}v^{16}}{s^7}$ B) $\frac{81p^{16}v^{16}}{s^{12}}$ C) $\frac{81p^8v^8}{s^7}$ D) $\frac{3p^{16}v^{16}}{s^{12}}$

Answer: B

Simplify the exponential expression.

313) $\frac{6x^6}{x^2}$

A) $6x^8$ B) $24x$ C) $1296x^4$ D) $6x^4$

Answer: D

314) $\frac{27x^{12}}{3x^4}$

A) x^7 B) x^8 C) $9x^7$ D) $9x^8$

Answer: D

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315) $\frac{x^2}{x^9}$

A) x^7 B) $-x^7$ C) $-\frac{1}{x^7}$ D) $\frac{1}{x^7}$

Answer: D

316) $\frac{-5ym^6n}{-9ym^9n}$

A) $\frac{-4}{m^3}$ B) $\frac{1}{4m^3}$ C) $\frac{-4y^2n^2}{m^3}$ D) $\frac{5}{9m^3}$

Answer: D

317) $y^{-6} \cdot y^2$

A) $\frac{1}{y^{12}}$ B) $\frac{1}{y^8}$ C) y^8 D) $\frac{1}{y^4}$

Answer: D

318) $(-5x^6y^{-7})(3x^{-1}y)$

A) $\frac{-15x^5}{y^6}$ B) $\frac{-2x^5}{y^6}$ C) $-15x^5y^8$ D) $\frac{-15x^7}{y^8}$

Answer: A

319) $\frac{y^{-7}}{y^2}$

A) $\frac{1}{y^5}$ B) $\frac{1}{y^{14}}$ C) $\frac{1}{y^9}$ D) y^9

Answer: C

320) $\frac{2^{-6}x^{-5}y^2}{2^{-3}x^{-8}y^4}$

A) $\frac{1}{8x^8y^2}$ B) $\frac{3x^3}{y^2}$ C) $\frac{x^3}{8y^2}$ D) $\frac{8}{x^3y^2}$

Answer: C

321) $\left(\frac{xy^5}{x^4y}\right)^{-2}$

A) $\frac{x^6}{y^8}$ B) $\frac{1}{x^6y^{11}}$ C) $\frac{y^8}{x^6}$ D) $\frac{1}{x^{10}y^{12}}$

Answer: A

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322) $\left(\frac{6x^{-5}y^{-2}z^{3}}{2xy^{-2}z^{-3}}\right)^{-3}$

A) $\frac{x^{18}}{27z^{18}}$ B) $\frac{3x^{18}}{z^{18}}$ C) $\frac{x^{12}}{27z^{18}}$ D) $\frac{x^{18}y^{4}}{27z^{18}}$

Answer: A

Solve the problem.

323) According to Bode's law, the distance d of the nth planet from the sun is $d = \frac{3(2^{n-2}) + 4}{10}$, in astronomical units.

Find the distance of Mars (n = 4) from the sun.

A) 2.8 units B) 1.0 units C) 1.6 units D) 0.7 units

Answer: C

324) When interest is compounded quarterly on an investment, the formula for finding the amount A of an investment is given by $A = P(1 + \frac{r}{4})^{4t}$, where P is the starting principal, r is the interest rate (as a decimal), and t is the time in years of the investment. What is the amount of an investment that started with $7000 at an interest rate of 4% for 1 year?

A) $35,437.5 B) $7070.26 C) $7284.23 D) $112,000

Answer: C

325) It is known that one–fourth of all aluminum cans distributed will be recycled each year, thus the number of cans still in use (recycled) after t years is $N = P(\frac{1}{4})^{t}$, where P is the number of cans produced in a year. If a beverage company distributes 241,000 new cans in a given year, how many of these cans are still in use after 3 years?

A) 20,083 cans B) 15,424,000 cans C) 30,125 cans D) 3765 cans

Answer: D

326) E. coli is a strain of bacteria that occurs naturally and is often used in lab experiments. Under certain conditions, the number of bacteria present in a colony is given by $E = E_o \cdot 2^{t/30}$, where E is the number of bacteria present t minutes after the beginning of an experiment, and E_o is the number present when t = 0. If E_o is 16, how many bacteria are present after 60 minutes?

A) 128 bacteria B) 512 bacteria C) 64 bacteria D) 20 bacteria

Answer: C

327) A person learning certain skills involving repetition tends to learn quickly at first and then learning tapers off and approaches some upper limit. Suppose the number of symbols per minute that a computer operator can produce is given by $P = 250 - 110(2)^{-0.5t}$, where t is the number of months the operator has been in training. Find the number of symbols after 4 months of training.

A) 190 symbols B) 35 symbols C) 560 symbols D) 222 symbols

Answer: D

Write the number in decimal notation without the use of exponents.

328) 3×10^{3}

A) 0.0003 B) 30,000 C) 3000 D) 0.003

Answer: C

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329) -6.93×10^{6}
A) −69,300,000 B) 6,930,000 C) −693,000 D) −6,930,000
Answer: D

330) 1.20×10^{0}
A) 12 B) 0 C) 1.2 D) 1
Answer: C

331) 2.92×10^{-4}
A) −292,000 B) 0.0000292 C) 0.000292 D) 0.00292
Answer: C

332) -8.9688×10^{6}
A) −89,688,000 B) −896,880 C) −8,968,800 D) −538.128
Answer: C

333) 2.134×10^{-6}
A) 0.0000002134 B) −2,134,000 C) 0.00002134 D) 0.000002134
Answer: D

Write the number in scientific notation.

334) 370,000
A) 3.7×10^{6} B) 3.7×10^{-6} C) 3.7×10^{5} D) 3.7×10^{-5}
Answer: C

335) 41,000,000
A) 4.1×10^{7} B) 4.1×10^{6} C) 4.1×10^{-6} D) 4.1×10^{-7}
Answer: A

336) 69,870
A) 6.987×10^{1} B) 6.987×10^{-4} C) 6.987×10^{5} D) 6.987×10^{4}
Answer: D

337) 0.000366
A) 3.66×10^{4} B) 3.66×10^{-5} C) 3.66×10^{-3} D) 3.66×10^{-4}
Answer: D

338) 0.000000095003
A) 9.5003×10^{-8} B) 9.5003×10^{-9} C) 9.5003×10^{8} D) 9.5003×10^{-7}
Answer: A

339) 7.34
A) 7.34×10^{1} B) 73.4×10^{-1} C) 7.34×10^{0} D) 73.4×10^{0}
Answer: C

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Perform the indicated computation. Write the answer in scientific notation.

340) $(7 \times 10^{-4})(7 \times 10^{-5})$

A) 4.9×10^{20} B) 490×10^{-9} C) 4.9×10^{-8} D) 49×10^{-8}

Answer: C

341) $(3 \times 10^{-8})(1.8 \times 10^{-1})$

A) 5.4×10^{8} B) 54×10^{-9} C) 5.4×10^{-9} D) 5.4×10^{-8}

Answer: C

342) $\dfrac{10 \times 10^{-4}}{2 \times 10^{7}}$

A) 10×10^{-11} B) 5×10^{-11} C) 10×10^{3} D) 5×10^{3}

Answer: B

343) $\dfrac{10.1 \times 10^{-9}}{5 \times 10^{-7}}$

A) 2.02×10^{-16} B) 4.04×10^{-2} C) 2.02×10^{-2} D) 4.04×10^{-16}

Answer: C

344) $\dfrac{9.68 \times 10^{4}}{4.4 \times 10^{-5}}$

A) 4.4×10^{-1} B) 2.2×10^{-1} C) 4.4×10^{9} D) 2.2×10^{9}

Answer: D

345) $\dfrac{24{,}000{,}000{,}000}{0.00006}$

A) 4×10^{14} B) 18×10^{13} C) 4×10^{13} D) 18×10^{14}

Answer: A

346) $\dfrac{0.00016 \times 0.0004}{0.0008}$

A) 64×10^{6} B) 64×10^{-6} C) 8×10^{5} D) 8×10^{-5}

Answer: D

Solve the equation. Express the solution in scientific notation.

347) $\dfrac{x}{5 \times 10^{-6}} = -1.1 \times 10^{-8}$

A) $\{5.5 \times 10^{-13}\}$ B) $\{-5.5 \times 10^{48}\}$ C) $\{-5.5 \times 10^{-14}\}$ D) $\{5.5 \times 10^{-14}\}$

Answer: C

348) $\dfrac{x}{7 \times 10^{5}} = 2.2 \times 10^{6}$

A) $\{154 \times 10^{11}\}$ B) $\{15.4 \times 10^{12}\}$ C) $\{1.54 \times 10^{12}\}$ D) $\{1.54 \times 10^{30}\}$

Answer: C

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349) $(2.4 \times 10^{-5})x = 8.64 \times 10^{6}$

A) $\{3.6 \times 10^{1}\}$ B) $\{7.2 \times 10^{11}\}$ C) $\{7.2 \times 10^{1}\}$ D) $\{3.6 \times 10^{11}\}$

Answer: D

350) $(3.2 \times 10^{11})x = 8.9 \times 10^{3}$

A) $\{2.78 \times 10^{8}\}$ B) $\{2.78 \times 10^{-8}\}$ C) $\{2.78 \times 10^{14}\}$ D) $\{1.21 \times 10^{-7}\}$

Answer: B

351) $(9.7 \times 10^{-6})x = 2.1 \times 10^{-2}$

A) $\{2.16 \times 10^{3}\}$ B) $\{1.18 \times 10^{5}\}$ C) $\{2.16 \times 10^{-9}\}$ D) $\{2.16 \times 10^{-5}\}$

Answer: A

352) $x - (7.3 \times 10^{15}) = 7.4 \times 10^{15}$

A) $\{1.47 \times 10^{31}\}$ B) $\{14.7 \times 10^{15}\}$ C) $\{1.47 \times 10^{14}\}$ D) $\{1.47 \times 10^{16}\}$

Answer: D

353) $(-2.7 \times 10^{-8})x = (2.5 \times 10^{-9})(5.4 \times 10^{8})$

A) $\{-5 \times 10^{9}\}$ B) $\{-5 \times 10^{-9}\}$ C) $\{-0.5 \times 10^{8}\}$ D) $\{-5 \times 10^{7}\}$

Answer: D

Solve. Express the result in scientific notation. If necessary, round the decimal factor to two decimal places.

354) A business projects next year's profits to be $81,000,000. Write this number in scientific notation.

A) 8.10×10^{6} B) 8.10×10^{7} C) 8.10×10^{8} D) 8.10×10^{-8}

Answer: B

355) A computer compiles a program in 0.000678 seconds. Write this number in scientific notation.

A) 6.78×10^{-6} B) 6.78×10^{-5} C) 6.78×10^{-4} D) 6.78×10^{3}

Answer: C

356) A particle is observed moving at 1.87×10^{3} meters per second. Find the distance the particle would travel in 5.56×10^{2} seconds.

A) 1.04×10^{5} meters B) 0.10×10^{6} meters C) 1.04×10^{6} meters D) 1.04×10^{7} meters

Answer: C

357) In a state with a population of 9,000,000 people, the average citizen spends $6,000 on housing each year. What is the total spent on housing for the state?

A) $\$54 \times 10^{10}$ B) $\$54 \times 10^{11}$ C) $\$5.4 \times 10^{9}$ D) $\$5.4 \times 10^{10}$

Answer: D

358) Approximately 5×10^{3} employees of a certain company average $30,000 each year in salary. What is the total amount earned by all the employees of this company per year?

A) $\$15 \times 10^{9}$ B) $\$1.5 \times 10^{9}$ C) $\$1.5 \times 10^{8}$ D) $\$15 \times 10^{8}$

Answer: C

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359) If the density of a substance is 1.68×10^{-4} tons per cubic foot, what would be the mass of 1.71×10^{-8} cubic feet of this substance. (Use the formula $D = \frac{M}{V}$.)

A) 2.87×10^{-13} tons B) 2.87×10^{-11} tons C) 0.29×10^{-12} tons D) 2.87×10^{-12} tons

Answer: D

360) If the mass of an object is 3.44401×10^{3} tons and its volume is 7.19×10^{6} cubic feet, find the density of this object. (Use the formula $D = \frac{M}{V}$.)

A) 4.79×10^{-4} tons per cubic foot B) 4.79×10^{-3} tons per cubic foot

C) 47.9×10^{-4} tons per cubic foot D) 4.79×10^{-5} tons per cubic foot

Answer: A

361) If the mass of an object is 2.67376×10^{-7} tons and its density is 9.83×10^{-2} tons per cubic foot, find the volume of this object. (Use the formula $D = \frac{M}{V}$.)

A) 2.72×10^{-6} cubic feet B) 2.72×10^{-7} cubic feet

C) 27.2×10^{-6} cubic feet D) 2.72×10^{-5} cubic feet

Answer: A

Provide an appropriate response.

362) Write the following English phrase as an algebraic expression:

Six times the difference of a number and eight.

Let x represent the number.

A) $6(8 - x)$ B) $6(x - 8)$ C) $6x - 8$ D) $6 - 8x$

Answer: B

363) Evaluate: $8 + 4(x - 1)^4$, for $x = 8$.

A) 26,252 B) 9596 C) 9612 D) 36

Answer: C

364) Use the roster method to list the elements in the set: {x | x is an integer greater than –2}.

A) {–3, –4, –5, . . .} B) {–2, –1, 0, 1, . . .} C) {–1, 0, 1, 2} D) {–1, 0, 1, . . .}

Answer: D

365) Determine whether the following statement is true or false.

$\frac{3}{5} \notin \{ x \mid x \text{ is a natural number} \}$

A) True B) False

Answer: A

366) Write out the meaning of the inequality $-20 > -5$. Then determine whether the inequality is true or false.

A) –20 is greater than –5; true B) –20 is less than –5; false

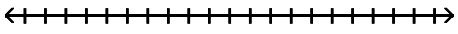
C) –20 is greater than –5; false D) –20 is less than –5; true

Answer: C

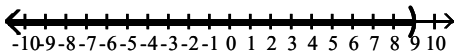
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Express the interval in set builder notation and graph the interval on a number line.

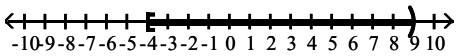
367) [−4, 9)



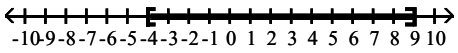
A) {x | x < 9}



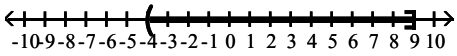
B) {x | −4 ≤ x < 9}



C) {x | −4 ≤ x ≤ 9}

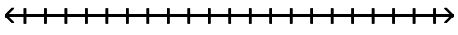


D) {x | −4 < x ≤ 9}

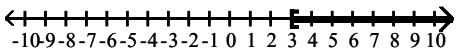


Answer: B

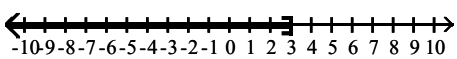
368) (−∞, 3]



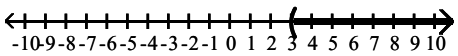
A) {x | x ≥ 3}



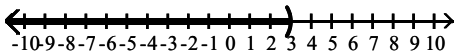
B) {x | x ≤ 3}



C) {x | x > 3}



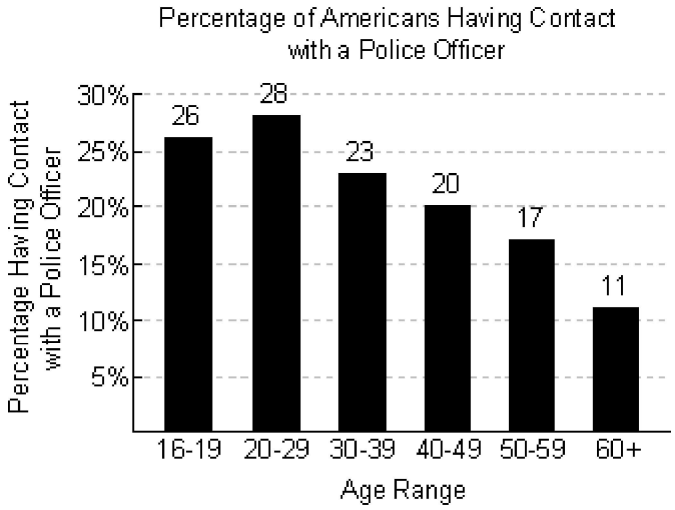
D) {x | x < 3}



Answer: B

Provide an appropriate response.

369) The bar graph shows the percentage of Americans in various age groups who had contact with a police officer, for anything from an arrest to asking directions, in a recent year.



The mathematical model $P = -0.6x^2 + 0.8x + 26.6$ describes the percentage of Americans, P, in age group x who had contact with a police officer. Does the model underestimate or overestimate the percentage of Americans between the ages of 16 and 19, inclusive, who had contact with a police officer? By how much?

A) overestimates by 0.8
B) underestimates by 1.8
C) overestimates by 1.8
D) underestimates by 0.8

Answer: A

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370) Find the absolute value: $|-3.3|$.

A) -3.3 B) 3.3 C) 0 D) 6.6

Answer: B

Perform the indicated operation.

371) $-14.9 + 8.4$

A) -6.5 B) 6.5 C) -23.3 D) 23.3

Answer: A

372) $\frac{2}{7} - \left(-\frac{1}{3}\right)$

A) $-\frac{5}{63}$ B) $-\frac{13}{21}$ C) $\frac{13}{21}$ D) $-\frac{1}{21}$

Answer: C

373) $4(-1)(5)(-9)$

A) 180 B) 8 C) 49 D) -180

Answer: A

374) $-\frac{8}{9}\left(-\frac{4}{5}\right)$

A) $\frac{45}{32}$ B) $\frac{9}{10}$ C) $\frac{6}{7}$ D) $\frac{32}{45}$

Answer: D

375) $\frac{-15.5}{-5}$

A) -3.1 B) 3.1 C) 3.01 D) -3.01

Answer: B

Simplify the expression.

376) $14 - 50 \div 5 \cdot 4$

A) -130 B) -26 C) -186 D) -185

Answer: B

377) $(2^2 - 4^3) - [18 \div (-3)]$

A) 26 B) -2 C) -54 D) -66

Answer: C

378) $\frac{7^2 + (11 - 5)^2}{24 \div 4 - (4 + 1)}$

A) 85 B) 35 C) 145 D) 1799

Answer: A

379) $-4x - 3(2x - 7) + 6$

A) $2x + 27$ B) $-10x - 15$ C) $10x - 15$ D) $-10x + 27$

Answer: D

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380) –5(2y – 7) – (4y – 9)

A) 6y + 44 B) –14y + 26 C) 14y + 26 D) –14y + 44

Answer: D

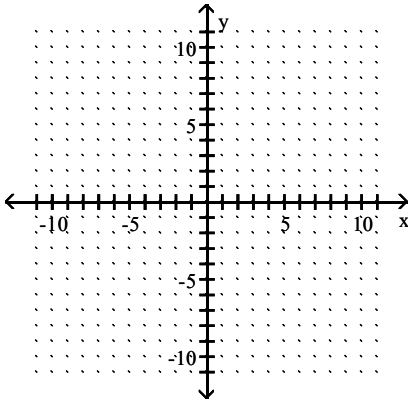
381) 7x – [2 – 6(9x – 8)]

A) –47x – 50 B) 61x – 46 C) –47x – 46 D) 61x – 50

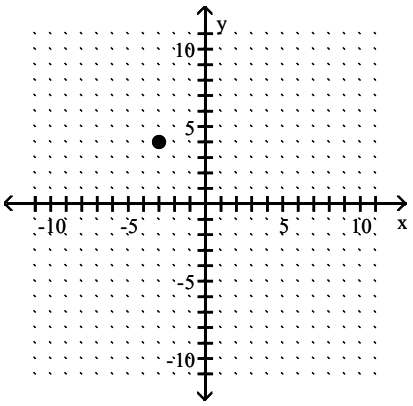
Answer: D

Provide an appropriate response.

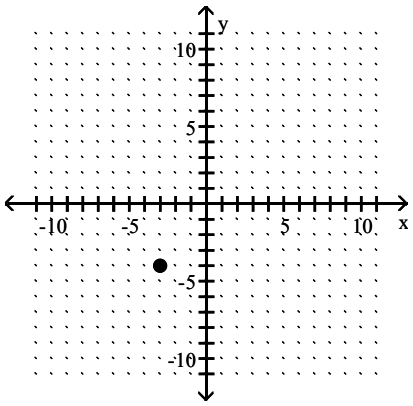
382) Plot (–3,–4) in a rectangular coordinate system.



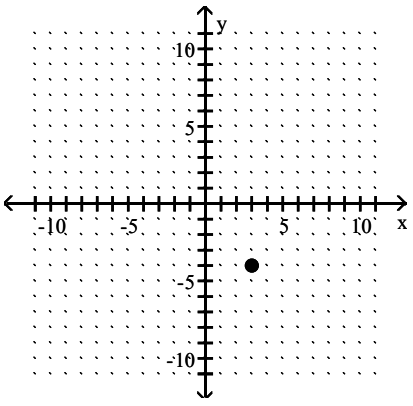
A)



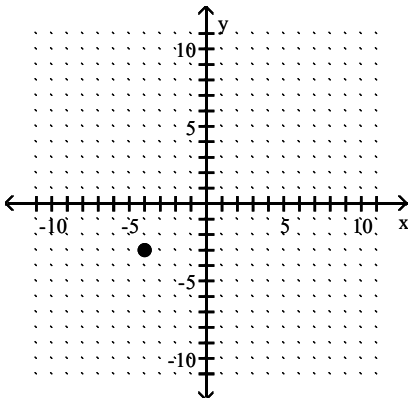
B)



C)



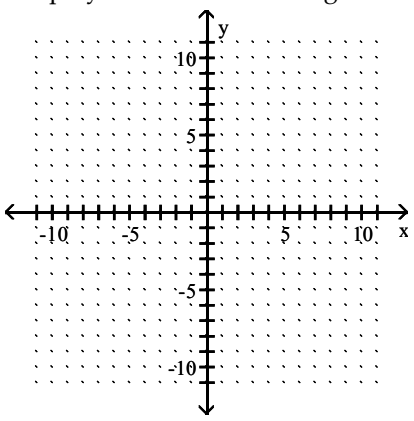
D)



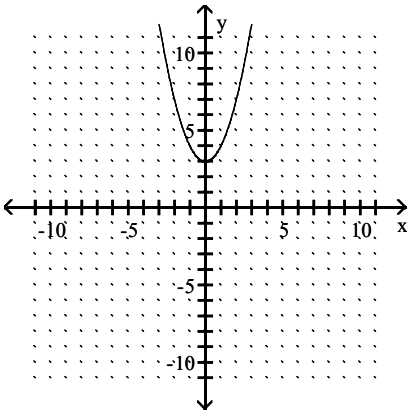
Answer: B

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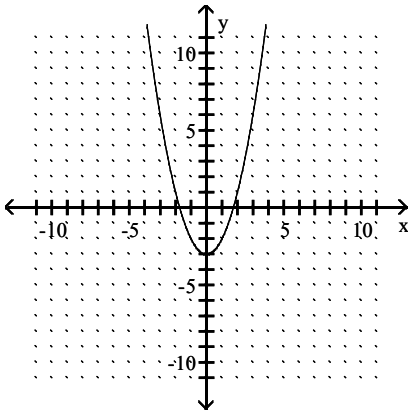
383) Graph $y = x^2 + 3$ in a rectangular coordinate system.



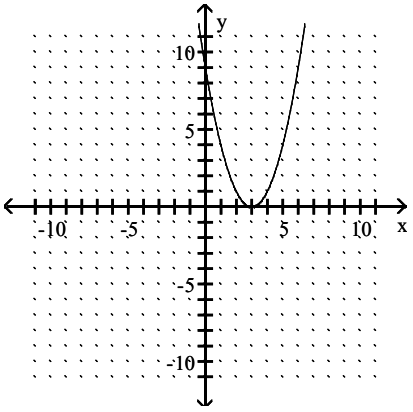
A)



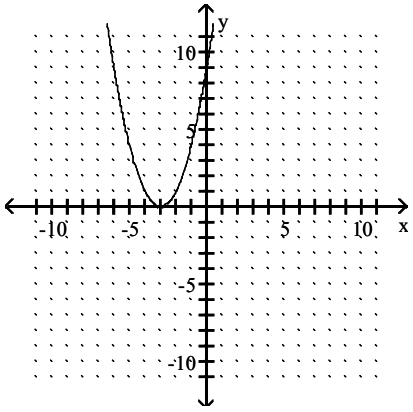
B)



C)



D)



Answer: A

Solve the equation. If the solution set is ∅ or (–∞, ∞), classify the equation as an inconsistent equation or an identity.

384) $-6(5x - 4) = -61 + 5(x + 10)$

A) (-∞, ∞); identity
B) {–1}
C) ∅; inconsistent equation
D) {1}

Answer: D

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385) $\frac{4x+2}{8} = \frac{x+5}{2} - \frac{x-4}{8}$

A) $(-\infty, \infty)$; identity
B) $\varnothing$; inconsistent equation
C) {22}
D) {26}

Answer: C

386) $3(x-5) - 31 = 7x - 4(x-6)$

A) {–55}
B) $(-\infty, \infty)$; identity
C) $\varnothing$; inconsistent equation
D) {–7}

Answer: C

Use the five–step strategy for solving word problems.

387) The sum of two numbers is 106. One number is 26 less than twice the other. Find the numbers.

A) 42 and 64
B) 42 and 58
C) 44 and 62
D) 58 and 48

Answer: C

388) You bought a new car for $11,389. Its value is decreasing by $1587 per year. After how many years will its value be $3454?

A) 1 year
B) 7 years
C) 6 years
D) 5 years

Answer: D

389) Andrea is having her yard landscaped. She obtained an estimate from two landscaping companies. Company A gave an estimate of $220 for materials and equipment rental plus $55 per hour for labor. Company B gave and estimate of $300 for materials and equipment rental plus $45 per hour for labor. Determine how many hours of labor will be required for the two companies to cost the same.

A) 12 hours
B) 7 hours
C) 11 hours
D) 8 hours

Answer: D

390) After a 16% price reduction, a boat sold for $25,200. What was the boat's price before the reduction? Round to the nearest cent, if necessary.

A) $29,232.00
B) $4032.00
C) $30,000
D) $157,500.00

Answer: C

391) The length of a rectangular garden exceeds the width by 8 feet. If the perimeter of the rectangle is 28 feet, what are its dimensions?

A) 3 ft by 11 ft
B) 3 ft by8 ft
C) 7 ft by 15 ft
D) 6 ft by 14 ft

Answer: A

Solve the formula for the specified variable.

392) $V = \frac{1}{3}lwh$ for h

A) $h = \frac{V}{3lw}$
B) $h = \frac{3V}{lw}$
C) $h = 3V - lw$
D) $h = 3Vlw$

Answer: B

393) $P = 2L + 2W$ for W

A) $W = \frac{P+2L}{2}$
B) $W = \frac{P-L}{2}$
C) $W = 2(P - 2L)$
D) $W = \frac{P-2L}{2}$

Answer: D

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Simplify the exponential expression.

394) $(-4x^{-5})(-2x^{-9})$

A) $8x^{14}$ B) $8x^{45}$ C) $\frac{8}{x^{14}}$ D) $-8x^{45}$

Answer: C

395) $(-2x^4y^{-5})(4x^{-1}y)$

A) $-\frac{8x^3}{y^4}$ B) $-\frac{8x^5}{y^6}$ C) $-8x^3y^6$ D) $-\frac{8x^5}{y^4}$

Answer: A

396) $\frac{-8x^{-9}y^{14}}{-56x^{-5}y^{-7}}$

A) $\frac{y^7}{7x^4}$ B) $\frac{y^{21}}{7x^4}$ C) $\frac{x^4y^7}{7}$ D) $\frac{x^4y^{21}}{7}$

Answer: B

397) $(3x^{-2}y^9)^{-1}$

A) $\frac{3}{y^9x^2}$ B) $\frac{x^2}{3y^9}$ C) $\frac{-3x^2}{y^9}$ D) $\frac{y^{10}}{3x^3}$

Answer: B

398) $\left(\frac{6x^{-3}y^3}{2xy^{-3}}\right)^{-1}$

A) $\frac{x^4y^6}{3}$ B) $\frac{3x^4}{y^6}$ C) $\frac{x^4}{3y^6}$ D) $\frac{x^2}{3y^6}$

Answer: C

Provide an appropriate response.

399) Write in decimal notation: 4.9×10^{-7}.

A) 0.00000005 B) 0.00000049 C) 0.000049 D) 0.0000049

Answer: B

400) Write in scientific notation: 1,530,000,000

A) 1.53×10^9 B) 1.53×10^8 C) 15.3×10^9 D) 1.53×10^{10}

Answer: A

401) Divide and write the answer in scientific notation: $\frac{3 \times 10^{-10}}{12 \times 10^{-4}}$

A) 2.5×10^{-6} B) 2.5×10^{-7} C) 0.25×10^{-6} D) 2.5×10^7

Answer: B

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402) Currently, the world population of a certain species is approximately 4.3×10^6. By some projections, this population will be 3 times as big in 30 years. Express the population 30 years from now in scientific notation.

A) 1.29×10^9 B) 1.29×10^7 C) 129×10^6 D) 12.9×10^7

Answer: B

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1) C
2) A
3) D
4) C
5) B
6) A
7) A
8) B
9) A
10) D
11) C
12) A
13) C
14) D
15) A
16) D
17) B
18) A
19) B
20) A
21) B
22) A
23) A
24) A
25) B
26) B
27) A
28) A
29) D
30) B
31) D
32) C
33) A
34) A
35) B
36) A
37) B
38) A
39) B
40) B
41) B
42) A
43) B
44) B
45) A
46) B
47) A
48) A
49) B
50) B

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51) B
52) A
53) A
54) A
55) B
56) B
57) A
58) B
59) A
60) A
61) B
62) B
63) A
64) B
65) A
66) B
67) A
68) B
69) A
70) B
71) A
72) B
73) D
74) C
75) B
76) D
77) C
78) C
79) A
80) C
81) C
82) D
83) D
84) B
85) B
86) A
87) B
88) C
89) B
90) D
91) A
92) C
93) C
94) D
95) C
96) B
97) D
98) B
99) C
100) D

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101) C
102) D
103) D
104) D
105) D
106) A
107) A
108) C
109) B
110) A
111) D
112) B
113) A
114) B
115) B
116) A
117) B
118) A
119) C
120) B
121) C
122) A
123) A
124) B
125) D
126) D
127) A
128) B
129) D
130) B
131) D
132) D
133) D
134) C
135) D
136) D
137) C
138) D
139) D
140) C
141) A
142) A
143) B
144) D
145) B
146) B
147) B
148) C
149) B
150) C

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151) A
152) B
153) B
154) B
155) D
156) C
157) C
158) D
159) B
160) A
161) C
162) D
163) C
164) D
165) D
166) A
167) B
168) A
169) C
170) A
171) B
172) A
173) C
174) B
175) D
176) B
177) C
178) C
179) B
180) D
181) A
182) D
183) C
184) A
185) D
186) D
187) D
188) D
189) A
190) D
191) C
192) A
193) B
194) A
195) C
196) A
197) C
198) A
199) B
200) A

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201) A
202) D
203) D
204) D
205) B
206) A
207) D
208) B
209) C
210) A
211) B
212) A
213) C
214) B
215) A
216) C
217) A
218) B
219) C
220) C
221) B
222) D
223) D
224) D
225) A
226) A
227) B
228) A
229) D
230) B
231) C
232) D
233) D
234) A
235) A
236) C
237) B
238) B
239) A
240) C
241) D
242) C
243) A
244) B
245) A
246) B
247) C
248) C
249) D
250) B

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251) C
252) D
253) B
254) D
255) D
256) B
257) B
258) D
259) C
260) C
261) C
262) B
263) B
264) C
265) B
266) C
267) B
268) A
269) B
270) D
271) C
272) C
273) D
274) D
275) D
276) B
277) A
278) B
279) D
280) A
281) D
282) A
283) A
284) C
285) B
286) B
287) C
288) D
289) D
290) C
291) C
292) A
293) B
294) B
295) A
296) A
297) A
298) C
299) A
300) A

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301) D
302) A
303) D
304) A
305) C
306) C
307) A
308) B
309) C
310) A
311) D
312) B
313) D
314) D
315) D
316) D
317) D
318) A
319) C
320) C
321) A
322) A
323) C
324) C
325) D
326) C
327) D
328) C
329) D
330) C
331) C
332) C
333) D
334) C
335) A
336) D
337) D
338) A
339) C
340) C
341) C
342) B
343) C
344) D
345) A
346) D
347) C
348) C
349) D
350) B

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351) A
352) D
353) D
354) B
355) C
356) C
357) D
358) C
359) D
360) A
361) A
362) B
363) C
364) D
365) A
366) C
367) B
368) B
369) A
370) B
371) A
372) C
373) A
374) D
375) B
376) B
377) C
378) A
379) D
380) D
381) D
382) B
383) A
384) D
385) C
386) C
387) C
388) D
389) D
390) C
391) A
392) B
393) D
394) C
395) A
396) B
397) B
398) C
399) B
400) A

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401) B
402) B

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