Algebra and Trigonometry - Enhanced with Graphing Utilities 9th edition Sullivan Test Bank

SKU: 9780135376157-TEST-BANK

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

Use U = universal set = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}, A = {1, 2, 3, 5, 8}, B = {2, 3, 5, 7}, and C = {1, 4, 9} to find the set.

1) $B \cup C$
   A) {1, 2, 3, 4, 5, 7, 9}
   B) {1, 2, 3, 5, 7, 9}
   C) {0}
   D) { }

   Answer: A

2) $A \cup C$
   A) {1}
   B) {1, 2, 3, 4, 5, 8, 9}
   C) {1, 2, 3, 5, 7, 9}
   D) {4, 6, 7, 9}

   Answer: B

3) $A \cap B$
   A) {1, 2, 3, 5, 7, 8}
   B) {1, 2, 3, 5, 8}
   C) {2, 3, 5, 7}
   D) {2, 3, 5}

   Answer: D

4) $A \cap C$
   A) {1, 2, 3, 4, 5, 7, 8, 9}
   B) {4, 6, 7, 9}
   C) {1, 2, 3, 5, 7, 9}
   D) {1}

   Answer: D

5) $(A \cap B) \cup C$
   A) {1, 2, 3}
   B) {1, 2, 3, 4, 5, 9}
   C) {2, 3, 5}
   D) {1, 2, 3, 5}

   Answer: B

6) $(B \cup C) \cap A$
   A) {1, 2, 3, 4, 5, 7, 9}
   B) {1, 2, 3}
   C) { }
   D) {1, 2, 3, 5}

   Answer: D

7) $\overline{B}$
   A) {1, 4, 6, 8, 9}
   B) {0, 1, 4, 6, 9}
   C) {0, 1, 4, 6, 8, 9}
   D) {0, 1, 4, 6, 7, 8, 9}

   Answer: C

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8) $\overline{A \cup B}$

A) {1, 2, 3, 5, 7, 8}
B) {1, 4, 6, 8, 9}
C) {4, 6, 9}
D) {0, 4, 6, 9}

Answer: D

9) $\overline{A \cap C}$

A) {1, 2, 3, 4, 5, 6, 7, 8, 9}
B) {1}
C) {0, 2, 3, 4, 5, 6, 7, 8, 9}
D) {1, 2, 3, 4, 5, 7, 8, 9}

Answer: C

10) $\overline{B} \cap \overline{C}$

A) { }
B) {6, 8}
C) {1, 2, 3, 4, 5, 7, 9}
D) {0, 6, 8}

Answer: D

List all the elements of B that belong to the given set.

11) $B = \left\{13, \sqrt{8}, -2, 0, \frac{8}{9}, -\frac{9}{8}, 2.1\right\}$

Integers

A) {13, - 2}
B) {13, - 2, 0}
C) {13, 0}
D) $\{13, 0, \sqrt{8}\}$

Answer: B

12) $B = \left\{17, \sqrt{7}, -11, 0, \frac{4}{9}, -\frac{9}{4}, 1.8\right\}$

Natural numbers

A) {17, 0}
B) {17}
C) {- 11, 0, 17}
D) $\left\{17, 0, -\frac{9}{4}\right\}$

Answer: B

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13) B = $\left\{12, \sqrt{6}, -5, 0, \frac{0}{8}\right\}$

Real numbers

A) $\{12, -5\}$

B) $\left\{12, -5, 0, \frac{0}{8}\right\}$

C) $\left\{12, \sqrt{6}, -5, 0, \frac{0}{8}\right\}$

D) $\{12, -5, 0\}$

Answer: C

14) B = $\left\{11, \sqrt{8}, -16, 0, \frac{0}{4}, 0.42\right\}$

Rational numbers

A) $\left\{11, -16, 0, \frac{0}{4}, 0.42\right\}$

B) $\{\sqrt{8}\}$

C) $\left\{\sqrt{8}, \frac{0}{4}, 0.42\right\}$

D) $\{11, 0\}$

Answer: A

15) B = $\left\{19, \sqrt{5}, -8, 0, \frac{0}{3}, 0.2\right\}$

Irrational numbers

A) $\{\sqrt{5}\}$

B) $\left\{\sqrt{5}, \frac{0}{3}\right\}$

C) $\left\{\sqrt{5}, \frac{0}{3}, 0.2\right\}$

D) $\{\sqrt{5}, 0.2\}$

Answer: A

16) B = $\{17, \sqrt{8}, -19, 0, \frac{5}{8}, -\frac{8}{5}, 3.3, 25\pi, 0.258258258...\}$

Integers

A) $\{17, -19, 0\}$

B) $\{17, -19\}$

C) $\{17, 0\}$

D) $\{17, 0, \sqrt{8}\}$

Answer: A

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17) B = $\{12, \sqrt{8}, -15, 0, \frac{7}{9}, -\frac{9}{7}, 8.8, 8\pi, 0.848484...\}$

Natural numbers

A) {12, 0}

B) {12}

C) {- 15, 0, 12}

D) $\left\{12, 0, -\frac{9}{7}\right\}$

Answer: B

18) B = $\{3, \sqrt{5}, -6, 0, \frac{0}{8}, \sqrt{9}, 0.12, -5\pi, 0.999...\}$

Rational numbers

A) $\left\{3, -6, 0, \frac{0}{8}, \sqrt{9}, 0.12, -5\pi, 0.999...\right\}$

B) $\left\{3, -6, 0, \frac{0}{8}, 0.12\right\}$

C) $\left\{3, -6, 0, \frac{0}{8}, \sqrt{9}, 0.12, 0.999...\right\}$

D) $\left\{3, -6, 0, \frac{0}{8}, 0.12, 0.999...\right\}$

Answer: C

19) B = $\{2, \sqrt{5}, -4, 0, \frac{0}{5}, , 0.29, -5\pi, 0.161616...\}$

Irrational numbers

A) $\{\sqrt{5}\}$

B) $\{\sqrt{5}, -5\pi, 0.161616...\}$

C) $\left\{\sqrt{5}, \frac{0}{5}, -5\pi\right\}$

D) $\{\sqrt{5}, -5\pi\}$

Answer: D

Approximate the number rounded to three decimal places, and truncated to three decimal places.

20) 7.1134

A) 7.113
7.114

B) 7.113
7.113

C) 7.114
7.113

D) 7.112
7.114

Answer: B

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21) 0.28571429

A) 0.286
0.285

B) 0.287
0.285

C) 0.285
0.286

D) 0.286
0.286

Answer: A

22) $\frac{24}{7}$

A) 3.43
3.429

B) 3.429
3.428

C) 3.429
3.429

D) 3.43
3.428

Answer: B

Write the statement using symbols.

23) The sum of 18 and 6 is 24.

A) $18 \cdot 6 = 108$

B) $18 - 6 = 12$

C) $18 + 6 = 24$

D) $\frac{18}{6} = 3$

Answer: C

24) The difference 21 less 7 equals 14.

A) $21 \cdot 7 = 147$

B) $21 - 7 = 14$

C) $21 + 7 = 28$

D) $\frac{21}{7} = 3$

Answer: B

25) The product of 30 and 6 equals 180.

A) $30 \cdot 6 = 180$

B) $30 + 6 = 36$

C) $\frac{30}{6} = 5$

D) $30 - 6 = 24$

Answer: A

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26) The quotient 18 divided by 9 is 2.

A) $18 - 9 = 9$

B) $\frac{18}{9} = 2$

C) $18 + 9 = 27$

D) $18 \cdot 9 = 162$

Answer: B

27) The sum of four times x and 5 decreased by 7 is 8.

A) $4(x + 5 - 7) = 8$

B) $7 - (4x + 5) = 8$

C) $4x + 5 - 7 = 8$

D) $4(x + 5) - 7 = 8$

Answer: C

28) Three times the difference of x and 8 is - 10.

A) $3(x - 8) = -10$

B) $3 + x - 8 = -10$

C) $3 - x - 8 = -10$

D) $3x - 8 = -10$

Answer: A

29) The quotient of x and the sum of 5 and x.

A) $x(5 + x)$

B) $x + 5 + x$

C) $\frac{x}{5 + x}$

D) $\frac{x + 5}{x}$

Answer: C

Evaluate the expression.

30) $3 + 1 - 9$

A) 13

B) 11

C) - 7

D) - 5

Answer: D

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31) $7 + \frac{5}{6}$

A) $\frac{42}{6}$

B) $\frac{42}{5}$

C) $\frac{47}{6}$

D) $\frac{47}{5}$

Answer: C

32) $2 \cdot [3(7 - 2) - 4]$

A) 22

B) - 14

C) - 10

D) 7

Answer: A

33) $2 \cdot [4 + 6 \cdot (3 + 4)]$

A) 136

B) 50

C) 92

D) 140

Answer: C

34) $-9 - (-2 + 6 \cdot 7 + 8)$

A) - 41

B) - 61

C) 39

D) - 57

Answer: D

35) $\frac{30}{14} \cdot \frac{2}{5}$

A) $\frac{7}{6}$

B) $\frac{7}{5}$

C) $\frac{15}{7}$

D) $\frac{6}{7}$

Answer: D

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36) $\frac{4}{5} \cdot \left(\frac{2}{5} + \frac{1}{10} \right)$

A) $\frac{1}{10}$

B) 2

C) $\frac{8}{25}$

D) $\frac{2}{5}$

Answer: D

37) $\frac{1}{4} \cdot \left(10 - \frac{1}{5} \right) + 8$

A) $\frac{103}{10}$

B) $\frac{209}{20}$

C) $\frac{89}{5}$

D) $\frac{57}{20}$

Answer: B

38) $\frac{5+2}{9+2}$

A) 1

B) $\frac{3}{7}$

C) $\frac{7}{11}$

D) $\frac{3}{11}$

Answer: C

39) $\frac{9-6}{6-9}$

A) 3

B) $-\frac{3}{2}$

C) -1

D) $\frac{3}{2}$

Answer: C

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40) $\frac{4}{5} + \frac{1}{14}$

A) $\frac{5}{19}$

B) $\frac{61}{70}$

C) $\frac{1}{14}$

D) $\frac{61}{19}$

Answer: B

41) $\frac{5}{7} - \frac{4}{6}$

A) $\frac{1}{42}$

B) $\frac{1}{21}$

C) $\frac{1}{7}$

D) $\frac{2}{7}$

Answer: B

42) $\frac{\frac{9}{13}}{\frac{6}{7}}$

A) $\frac{26}{21}$

B) $\frac{21}{26}$

C) $\frac{54}{91}$

D) $\frac{91}{54}$

Answer: B

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43) $\frac{1}{5}+\frac{1}{8}\cdot\frac{1}{9}$

A) $\frac{1}{180}$

B) $\frac{77}{360}$

C) $\frac{13}{360}$

D) $\frac{49}{40}$

Answer: B

Use the Distributive Property to remove the parentheses.

44) $8(x+7)$

A) $8x+7$

B) $x+56$

C) $56x$

D) $8x+56$

Answer: D

45) $5x(x+9)$

A) $45x^2$

B) $5x^2+45x$

C) x^2+45x

D) $5x^2+9$

Answer: B

46) $7(4x+8)$

A) $11x+15$

B) $84x$

C) $28x+56$

D) $28x+8$

Answer: C

47) $4\left(\frac{1}{2}x+\frac{1}{8}\right)$

A) $2x+\frac{1}{8}$

B) $2x+\frac{1}{2}$

C) $2x+\frac{1}{4}$

D) $\frac{1}{2}x+\frac{1}{2}$

Answer: B

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48) $(x - 7)(x - 3)$

A) $x^2 - 10x + 21$

B) $x^2 + 21x - 10$

C) $x^2 - 10x - 10$

D) $x^2 - 11x + 21$

Answer: A

49) $(x + 4)(x + 7)$

A) $x^2 + 28x + 11$

B) $x^2 + 11x + 11$

C) $x^2 + 10x + 28$

D) $x^2 + 11x + 28$

Answer: D

50) $(x + 4)(x - 4)$

A) $x^2 - 8$

B) $x^2 + 8x - 16$

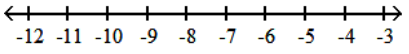
C) $x^2 - 16$

D) $x^2 - 8x - 16$

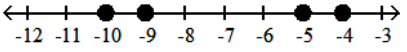
Answer: C

On the real number line, label the points with the given coordinates.

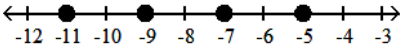
51) $-11, -9, -7, -5$



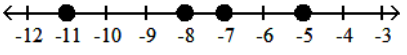
A)



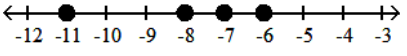
B)



C)



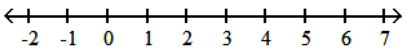
D)



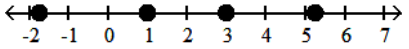
Answer: B

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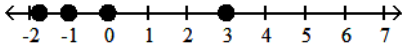
52) - 1.75, 1, 3, 5.25



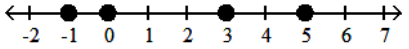
A)



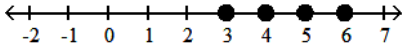
B)



C)

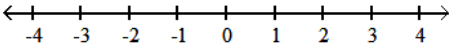


D)

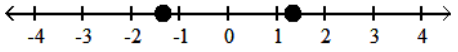


Answer: A

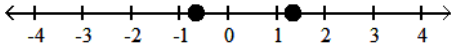
53) $\frac{4}{3}$, - $\frac{4}{3}$



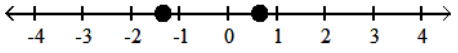
A)



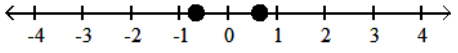
B)



C)



D)



Answer: A

Insert <, >, or = to make the statement true.

54) - 5 ____ - 6

A) =

B) >

C) <

Answer: B

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55) 6.7 ____ - 3.9

A) >
B) =
C) <

Answer: A

56) - 38 ____ - 92

A) >
B) =
C) <

Answer: A

57) 4 ____ - 4

A) <
B) =
C) >

Answer: C

58) $\frac{1}{8}$ ____ 0.125

A) <
B) =
C) >

Answer: B

59) 2.64 ____ $\sqrt{7}$

A) =
B) >
C) <

Answer: C

60) 3.14 ____ π

A) =
B) >
C) <

Answer: C

Write the statement as an inequality.

61) y is positive

A) $y < 0$
B) $y > 0$
C) $y \leq 0$
D) $y \geq 0$

Answer: B

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62) y is greater than - 92

A) $y < -92$

B) $y \leq -92$

C) $y > -92$

D) $y \geq -92$

Answer: C

63) y is greater than or equal to 65

A) $y < 65$

B) $y \leq 65$

C) $y > 65$

D) $y \geq 65$

Answer: D

64) z is less than or equal to 1

A) $z \leq 1$

B) $z > 1$

C) $z = 1$

D) $z < 1$

Answer: A

65) x is less than 5

A) $x > 5$

B) $x \geq 5$

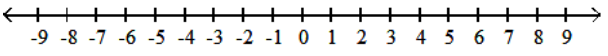
C) $x \leq 5$

D) $x < 5$

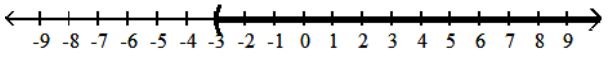
Answer: D

Graph the numbers on the real number line.

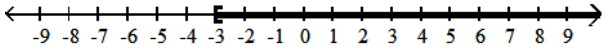
66) $x > -3$



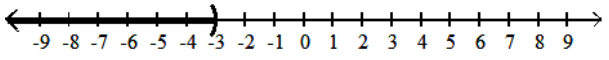
A)



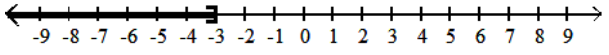
B)



C)



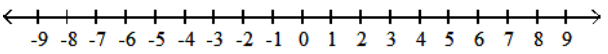
D)



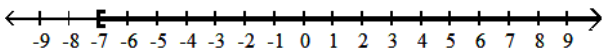
Answer: A

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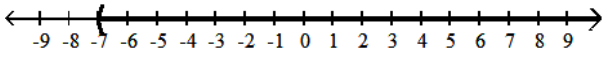
67) $x < -7$



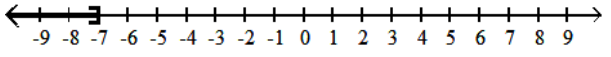
A)



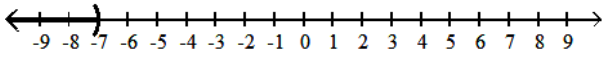
B)



C)

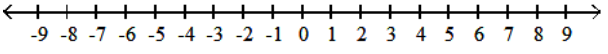


D)

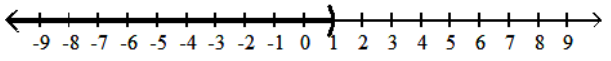


Answer: D

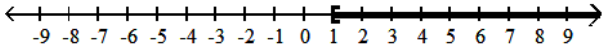
68) $x \geq 1$



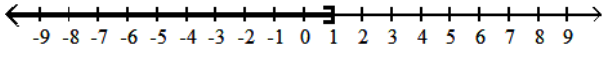
A)



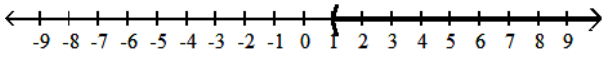
B)



C)



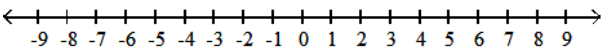
D)



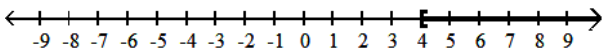
Answer: B

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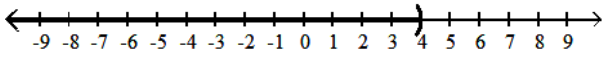
69) $x \leq 4$



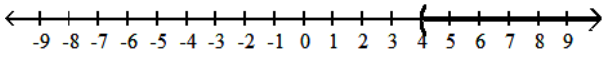
A)



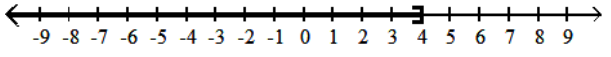
B)



C)



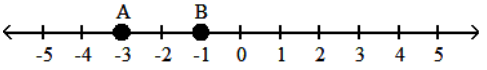
D)



Answer: D

Use the given real number line to compute the distance.

70) Find d(A, B)



A) 3
B) 1
C) 2
D) - 2

Answer: C

Evaluate the expression using the given values.

71) $x + 8y \quad x = -2, y = -3$

A) - 19
B) - 5
C) 6
D) - 26

Answer: D

72) $-6xy + 6y - 4 \quad x = -2, y = -1$

A) - 18
B) - 14
C) - 22
D) 2

Answer: C

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73) $-10x + y$ $x = -3, y = -3$

A) -13
B) 27
C) -6
D) -33

Answer: B

74) $\frac{15x - 5y}{5}$ $x = 9, y = 7$

A) 26
B) 34
C) 12
D) 20

Answer: D

75) $\frac{6x - 7y}{x + 3}$ $x = 10, y = 6$

A) $\frac{34}{9}$
B) 2
C) $\frac{18}{13}$
D) $\frac{34}{13}$

Answer: C

76) $\frac{4xy + 15}{x}$ $x = 5, y = 7$

A) 3
B) 43
C) 31
D) 7

Answer: C

77) $|x + y|$ $x = -8, y = 3$

A) 5
B) -5
C) -11
D) 11

Answer: A

78) $|x| + |y|$ $x = -8, y = 2$

A) -10
B) -6
C) 10
D) 6

Answer: C

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79) $|6x - 7y|$ $x = 9, y = 9$

A) - 117
B) 117
C) 9
D) - 9

Answer: C

80) $\frac{|x|}{x} + \frac{|y|}{y}$ $x = 6$ and $y = -3$

A) - 1
B) 1
C) 2
D) 0

Answer: D

81) $|6x + 10y|$ $x = -3, y = -2$

A) 42
B) 2
C) 18
D) 38

Answer: D

82) $4|x| + 5|y|$ $x = 9, y = -6$

A) - 66
B) 66
C) 6
D) - 6

Answer: B

Use the formula $C = \frac{5}{9}(F - 32)$ for converting degrees Fahrenheit into degrees Celsius to find the Celsius measure of the Fahrenheit temperature.

83) $F = -13°$

A) $-30°$ C
B) $-25°$ C
C) $-20°$ C
D) $-15°$ C

Answer: B

Express the statement as an equation involving the indicated variables.

84) The area A of a rectangle is the product of its length l and its width w.

A) $A = lw$
B) $A = l + w$
C) $A = \frac{l}{w}$
D) $A = 2(l + w)$

Answer: A

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85) The perimeter P of a rectangle is twice the sum of its length l and its width w.

A) $P = l + w$

B) $P = 2(l + w)$

C) $P = lw$

D) $P = 2lw$

Answer: B

86) The circumference C of a circle is the product of π and its diameter d.

A) $C = \frac{\pi}{d}$

B) $C = 2\pi d$

C) $C = \pi d$

D) $C = \pi + d$

Answer: C

87) The area A of a triangle is one- half the product of its base b and its height h.

A) $A = bh$

B) $A = \frac{1}{2}bh$

C) $A = \frac{1}{2}(b + h)$

D) $A = 2bh$

Answer: B

88) The volume V of a sphere is $\frac{4}{3}$ times π times the cube of the radius r.

A) $V = \frac{4}{3}\pi \sqrt[3]{r}$

B) $V = \frac{4}{3}\pi r^2$

C) $V = \frac{4}{3}\pi r$

D) $V = \frac{4}{3}\pi r^3$

Answer: D

89) The surface area S of a sphere is 4 times π times the square of the radius r.

A) $S = 4\pi r^2$

B) $S = \pi r^2$

C) $S = 4\pi \sqrt{r}$

D) $S = 4\pi r$

Answer: A

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90) The volume V of a cube is the cube of the length x of a side.

A) $V = 3x$

B) $V = x^2$

C) $V = x^3$

D) $V = \sqrt[3]{x}$

Answer: C

91) The surface area S of a cube is 6 times the square of the length x of a side.

A) $S = 6 + x^2$

B) $S = 6x$

C) $S = 6x^2$

D) $S = x^2$

Answer: C

Solve the problem.

92) The weekly production cost C of manufacturing x calendars is given by $C(x) = 29 + 3x$, where the variable C is in dollars. What is the cost of producing 213 calendars?

A) $242.00

B) $6,180.00

C) $639.00

D) $668.00

Answer: D

93) At the beginning of the month, Christopher had a balance of $196 in his checking account. During the next month, he wrote a check for $19, deposited $90, and wrote another check for $180. What was his balance at the end of the month?

A) $93

B) - $87

C) $87

D) - $93

Answer: C

Determine which value(s), if any, must be excluded from the domain of the variable in the expression.

94) $\dfrac{x^2 - 64}{x}$

A) $x = -8$

B) $x = 0$

C) $x = 8, x = -8$

D) $x = 8, x = 0$

Answer: B

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95) $\frac{7x - 2}{x^2 - 16}$

A) x = 16
B) x = 4
C) x = $\frac{2}{7}$
D) x = 4, x = - 4

Answer: D

96) $\frac{x^3 + 7x^4}{x^2 + 36}$

A) x = - 6
B) x = 0, x = - $\frac{1}{7}$
C) x = - 36
D) none

Answer: D

97) $\frac{x^2 + 6x + 9}{x^3 - 9x}$

A) x = 3, x = 0
B) x = 3, x = - 3
C) x = 3, x = - 3, x = 0
D) x = 0

Answer: C

98) $\frac{x}{x - 8}$

A) x = 0
B) x = - 8
C) x = 8
D) none

Answer: C

99) $\frac{2}{x + 2}$

A) x = 0
B) x = - 2
C) x = 2
D) none

Answer: B

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100) $\frac{x - 8}{x - 3}$

A) x = - 3
B) x = 0
C) x = 3
D) none

Answer: C

Simplify the expression.

101) 5^4

A) - 20
B) 20
C) - 625
D) 625

Answer: D

102) -4^2

A) 16
B) 8
C) - 8
D) - 16

Answer: D

103) 5^{-2}

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

Answer: D

104) $(-5)^{-4}$

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

Answer: A

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105) -4^{-2}

A) $-\frac{1}{16}$

B) 16

C) - 16

D) $\frac{1}{8}$

Answer: A

106) $(-4)^3$

A) - 12

B) 64

C) - 64

D) 12

Answer: C

107) $2^{-5} \cdot 2^2$

A) $\frac{1}{16}$

B) $\frac{1}{8}$

C) 4

D) 8

Answer: B

108) $(4^{-1})^{-2}$

A) 16

B) $\frac{1}{16}$

C) 4

D) $\frac{1}{4}$

Answer: A

Simplify the expression. Express the answer so that all exponents are positive. Whenever an exponent is 0 or negative, we assume that the base is not 0.

109) $(6xy)^3$

A) $\frac{1}{216x^3y^3}$

B) $6x^3y^3$

C) 216xy

D) $216x^3y^3$

Answer: D

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110) $(12x^3)^{-2}$

A) $\frac{x^6}{144}$

B) $\frac{1}{144x^6}$

C) $144x^6$

D) $\frac{144}{x^6}$

Answer: B

111) $(-5x^3)^{-1}$

A) $-\frac{1}{5x^3}$

B) $-\frac{1}{125x^3}$

C) $\frac{1}{125x^3}$

D) $\frac{1}{5x^3}$

Answer: A

112) $(x^9y^{-1})^8$

A) $\frac{1}{x^{72}y^8}$

B) $\frac{x^{72}}{y^8}$

C) $\frac{y^8}{x^{72}}$

D) $x^{72}y^8$

Answer: B

113) $(x^{-2}y)^6$

A) $\frac{1}{x^{12}y^6}$

B) $\frac{y^6}{x^{12}}$

C) $\frac{y^6}{x^2}$

D) $x^{12}y^6$

Answer: B

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114) $\frac{x^{-2}y^2}{xy^7}$

A) $\frac{1}{x^3y^5}$

B) $\frac{x}{y^5}$

C) $\frac{y^5}{x^3}$

D) $\frac{1}{xy^5}$

Answer: A

115) $\frac{x^{-3}y^8}{x^5y^{11}}$

A) x^8y^3

B) $\frac{1}{x^8y^3}$

C) $\frac{x^8}{y^3}$

D) $\frac{y^3}{x^8}$

Answer: B

116) $\left(\frac{4x^{-1}}{5y^{-1}}\right)^{-3}$

A) $\frac{125x^3}{64y^3}$

B) $\frac{125y^3}{64x^3}$

C) $\frac{64x^3}{125y^3}$

D) $\frac{64y^3}{125x^3}$

Answer: A

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117) $\left(\frac{9x^{-3}}{8y^{-3}}\right)^{-1}$

A) $\frac{9x^3}{8y^3}$

B) $\frac{8y^3}{9x^3}$

C) $\frac{8x^3}{9y^3}$

D) $\frac{9x^{31}}{8y^{31}}$

Answer: C

118) $(x^{-9}y^2)^{-4}z^3$

A) $\frac{x^{36}}{y^8z^3}$

B) $\frac{x^{36}z^3}{y^8}$

C) $\frac{y^8}{x^{36}z^3}$

D) $\frac{y^8z^3}{x^{36}}$

Answer: B

119) $\left(\frac{-4x^4y^{-4}}{5z^7}\right)^{-1}$

A) $\frac{5y^4}{-4x^4z^7}$

B) $\frac{5z^7}{-4x^4y^4}$

C) $\frac{5y^4z^7}{-4x^4}$

D) $\frac{-4x^4}{5y^4z^7}$

Answer: C

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Evaluate the expression using the given value of the variables.

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

A) 100
B) 36
C) 20
D) 10

Answer: A

121) $- 3x^{-1}y^2$ for $x = -2, \ y = -2$

A) 6
B) $\frac{3}{8}$
C) 24
D) $\frac{2}{3}$

Answer: A

122) $4x^2 + 5y^2$ for $x = -3, \ y = 3$

A) 51
B) 81
C) - 9
D) 33

Answer: B

123) $7x^3 + 4x^2 - 2x - 3$ for $x = 1$

A) 10
B) - 2
C) 12
D) 6

Answer: D

Solve.

124) What is the value of $\frac{(6{,}666)^4}{(3{,}333)^4}$?

A) $(2{,}222)^4$
B) $(3{,}333)^4$
C) 48
D) 16

Answer: D

Simplify the expression.

125) $\sqrt{4}$

A) 2
B) $\frac{1}{4}$
C) 16
D) not a real number

Answer: A

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126) $\sqrt{(-5)^2}$

A) 5

B) $\frac{1}{25}$

C) 625

D) not a real number

Answer: A

Find the value of the expression using the given values.

127) $\sqrt{x^2}$ $x = -6$

A) -6

B) $-2\sqrt{3}$

C) $2\sqrt{3}$

D) 6

Answer: D

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

A) 81

B) 9

C) $\frac{1}{81}$

D) $\frac{1}{9}$

Answer: B

129) $\sqrt{x^2 + y^2}$ $x = 15, y = 20$

A) 13

B) 18

C) 24

D) 25

Answer: D

130) $\sqrt{x^2 + y^2}$ $x = -3, y = 1$

A) 3

B) 4

C) -2

D) $\sqrt{10}$

Answer: D

131) $\sqrt{x^2} + \sqrt{y^2}$ $x = -9, y = -4$

A) 5

B) -5

C) 97

D) 13

Answer: D

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132) y^x $x = -1, y = 4$

A) -4

B) $-\frac{1}{4}$

C) $\frac{1}{4}$

D) 4

Answer: C

Use a calculator to evaluate the expression. Round the answer to three decimal places.

133) $(-1.57)^{-5}$

A) 9.539

B) 0.105

C) - 9.539

D) - 0.105

Answer: D

134) $-(-1.57)^{-2}$

A) 2.465

B) - 2.465

C) 0.406

D) - 0.406

Answer: D

135) $(4.49)^2$

A) - 20.160

B) - 0.050

C) 20.160

D) 0.050

Answer: C

Write the number in scientific notation.

136) 10,913

A) 1.0913×10^1

B) 1.0913×10^{-4}

C) 1.0913×10^5

D) 1.0913×10^4

Answer: D

137) 308.57

A) 3.0857×10^{-2}

B) 3.0857×10^1

C) 3.0857×10^{-1}

D) 3.0857×10^2

Answer: D

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138) 754.294

A) 7.54294×10^{-1}

B) 7.54294×10^{-2}

C) 7.54294×10^{2}

D) 7.54294×10^{1}

Answer: C

139) 819,000

A) 8.2×10^{5}

B) 8.2×10^{-4}

C) 8.2×10^{-5}

D) 8.2×10^{4}

Answer: A

140) 33,000,000

A) 3.3×10^{7}

B) 3.3×10^{-7}

C) 3.3×10^{-8}

D) 3.3×10^{8}

Answer: A

141) 0.000486

A) 4.86×10^{4}

B) $4.86 \circ 10^{-4}$

C) 4.86×10^{-5}

D) 4.86×10^{-3}

Answer: B

142) 0.00006693

A) 6.693 ± 10^{-4}

B) 6.693×10^{4}

C) 6.693×10^{5}

D) 6.693×10^{-5}

Answer: D

143) 0.0000027813

A) 2.7813×10^{6}

B) 2.7813×10^{-6}

C) 2.7813×10^{-5}

D) 2.7813×10^{-7}

Answer: B

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144) 0.000000666012

A) 6.66012×10^{-6}

B) 6.66012×10^{-7}

C) 6.66012×10^{6}

D) 6.66012×10^{7}

Answer: B

145) 0.0000000968011

A) 9.68011×10^{-9}

B) 9.68011×10^{-8}

C) 9.68011×10^{8}

D) 9.68011×10^{-7}

Answer: B

146) In a certain city, the bus system carried a total of 11,800,000,000 passengers.

A) 1.18×10^{11}

B) 11.8×10^{10}

C) 1.18×10^{10}

D) 1.18×10^{9}

Answer: C

147) A business projects next year's profits to be $741,000,000.

A) 7.41×10^{-9}

B) 7.41×10^{8}

C) 7.41×10^{9}

D) 7.41×10^{7}

Answer: B

148) A computer compiles a program in 0.0000266 seconds.

A) 2.66×10^{4}

B) 2.66×10^{-6}

C) 2.66×10^{-5}

D) 2.66×10^{-7}

Answer: C

Write the number as a decimal.

149) 4.13×10^{7}

A) 41,300,000

B) 4,130,000

C) 413,000,000

D) 289.1

Answer: A

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150) 5.378×10^5

A) 268.9
B) 537,800
C) 5,378,000
D) 53,780

Answer: B

151) 2.9135×10^7

A) 2,913,500
B) 29,135,000
C) 203.945
D) 291,350,000

Answer: B

152) 3.66×10^{-4}

A) - 366,000
B) 0.000366
C) 0.00366
D) 0.0000366

Answer: B

153) 4.464×10^{-5}

A) - 446,400
B) 0.0004464
C) 0.000004464
D) 0.00004464

Answer: D

154) 7.306×10^{-6}

A) - 7,306,000
B) 0.0000007306
C) 0.000007306
D) 0.00007306

Answer: C

155) 5.0458×10^{-7}

A) 0.0000050458
B) - 504,580,000
C) 0.00000050458
D) 0.000000050458

Answer: C

156) There are 2.711×10^2 miles of highways, roads, and streets in a certain city.

A) 27.11
B) 27,110
C) 2,711
D) 271.1

Answer: D

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The lengths of the legs of a right triangle are given. Find the hypotenuse.

157) a = 24, b = 7

A) 5
B) 25
C) 625
D) 20

Answer: B

158) a = 6, b = 8

A) 10
B) 9
C) 7
D) 5

Answer: A

The lengths of the sides of a triangle are given. Determine if the triangle is a right triangle. If it is, identify the hypotenuse.

159) 7, 24, 25

A) right triangle; 24
B) right triangle; 25
C) right triangle; 7
D) not right triangle

Answer: B

160) 2, 3, 4

A) right triangle; 2
B) right triangle; 3
C) right triangle; 4
D) not right triangle

Answer: D

161) 15, 20, 25

A) right triangle; 20
B) right triangle; 25
C) right triangle; 15
D) not a right triangle

Answer: B

162) 15, 36, 39

A) right triangle; 15
B) right triangle; 36
C) right triangle; 39
D) not a right triangle

Answer: C

163) 28, 96, 100

A) right triangle; 96
B) right triangle; 28
C) right triangle; 100
D) not a right triangle

Answer: C

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164) 10, 20, 25

A) right triangle; 20
B) right triangle; 25
C) right triangle; 10
D) not a right triangle

Answer: D

165) 6, 8, 12

A) right triangle; 6
B) right triangle; 8
C) right triangle; 12
D) not a right triangle

Answer: D

Solve. Use the fact that the radius of the Earth is 3960 miles and 1 mile = 5280 feet.

166) A guard tower at a state prison stands 117 feet tall. How far can a guard see from the top of the tower? Round to the nearest tenth of a mile.

A) 969.7 mi
B) 13.2 mi
C) 18.7 mi
D) 5,600.3 mi

Answer: B

167) A person who is 5 feet tall is standing on the beach and looks out onto the ocean. Suddenly, a ship appears on the horizon. How far is the ship from the shore? Round to the nearest tenth of a mile.

A) 3.9 mi
B) 5,600.3 mi
C) 2.7 mi
D) 199.1 mi

Answer: C

Solve the problem.

168) Find the area A of a rectangle with length 20 yd and width 24 yd.

A) A = 80 yd^2
B) A = 480 yd^2
C) A = 960 yd^2
D) A = 44 yd^2

Answer: B

169) Find the area A of a rectangle with length 7.2 in and width 11.1 in.

A) A = 79.92 in^2
B) A = 18.3 in^2
C) A = 28.8 in^2
D) A = 159.84 in^2

Answer: A

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170) Find the area A of a triangle with height 2 cm and base 5 cm.

A) A = 5 cm

B) A = 10 cm^2

C) A = 5 cm^2

D) A = 10 cm

Answer: C

171) Find the area A and circumference C of a circle of radius 11 yd. Express the answer in terms of π.

A) A = 44π yd^2; C = 11π yd

B) A = 121π yd^2; C = 22π yd

C) A = 22π yd^2; C = 22π yd

D) A = 484π yd^2; C = 11π yd

Answer: B

172) Find the area A and circumference C of a circle of diameter 22 in.. Use 3.14 for π. Round the result to the nearest tenth.

A) A = 1,519.8 $in.^2$; C = 34.5 in.

B) A = 69.1 $in.^2$; C = 69.1 in.

C) A = 138.2 $in.^2$; C = 34.5 in.

D) A = 379.9 $in.^2$; C = 69.1 in.

Answer: D

173) Find the volume V of a rectangular box with length 4 in., width 6 in., and height 7 in..

A) V = 112 $in.^3$

B) V = 168 $in.^3$

C) V = 144 $in.^3$

D) V = 294 $in.^3$

Answer: B

174) Find the surface area S of a rectangular box with length 5 ft, width 3 ft, and height 2 ft.

A) 56 ft^2

B) 72 ft^2

C) 62 ft^2

D) 31 ft^2

Answer: C

175) Find the volume V and surface area S of a sphere of radius 2 centimeters. Express the answer in terms of π.

A) V = 8π cm^3; S = 4π cm^2

B) V = 32π cm^3; S = 1π cm^2

C) V = $\frac{32}{3}\pi$ cm^3; S = 16π cm^2

D) V = $\frac{8}{3}\pi$ cm^3; S = $\frac{32}{3}\pi$ cm^2

Answer: C

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176) Find the volume V of a sphere of radius 2.5 yd. Use 3.14 for π. If necessary, round the result to the nearest tenth.

A) V = 36.8 yd^3

B) V = 65.4 yd^3

C) V = 523.3 yd^3

D) V = 26.2 yd^3

Answer: B

177) Find the volume V of a right circular cylinder with radius 10 cm and height 20 cm. Express the answer in terms of π.

A) V = 500π cm^3

B) V = 200π cm^3

C) V = 100π cm^3

D) V = 2,000π cm^3

Answer: D

178) Find the surface area S of a right circular cylinder with radius 10 cm, and height 4 cm. Use 3.14 for π. Round your answer to one decimal place.

A) 879.2 cm^2

B) 439.6 cm^2

C) 753.6 cm^2

D) 1,256.0 cm^2

Answer: A

179) Find the volume V of a sphere of diameter 10 m. Use 3.14 for π. If necessary, round the result to the nearest tenth.

A) V = 294.4 m^3

B) V = 4,186.7 m^3

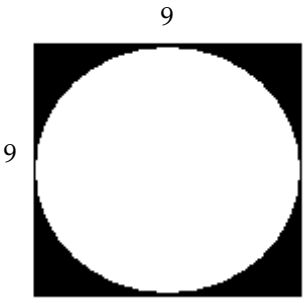
C) V = 104.7 m^3

D) V = 523.3 m^3

Answer: D

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180) Find the area of the shaded region. Express the answer in terms of π.



A) $81 - \frac{81}{2}\pi$ square units

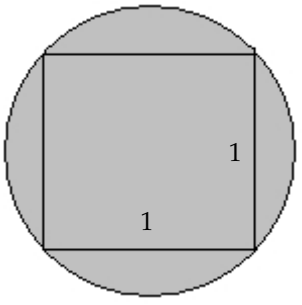
B) $\frac{81}{4}\pi + 81$ square units

C) $81 - \frac{81}{4}\pi$ square units

D) $324 - 81\pi$ square units

Answer: C

181) Find the area of the shaded region. Express the answer in terms of π.



A) $\frac{1}{2}\pi$ square units

B) $\frac{1}{2}$ square units

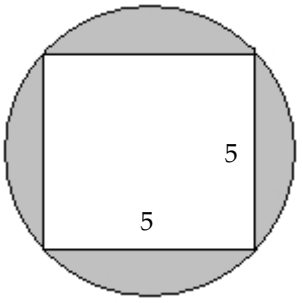
C) 1π square units

D) $\frac{1}{4}\pi$ square units

Answer: A

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182) Find the area of the shaded region. Express the answer in terms of π.



A) 5π- 5 square units

B) $\frac{25}{4}\pi$- 25 square units

C) 25 square units

D) $\frac{25}{2}\pi$ - 25 square units

Answer: D

183) A bicycle wheel makes 4 revolutions. Determine how far the bicycle travels in inches if the diameter of the wheel is 22 in. Use $\pi \approx 3.14$. Round to the nearest tenth.

A) 69.1 in.

B) 88 in.

C) 552.6 in.

D) 276.3 in.

Answer: D

184) A rectangular patio has dimensions 10 feet by 15 feet. The patio is surrounded by a border with a uniform width of 3 feet. Find the area of the border.

A) 84 ft^2

B) 162 ft^2

C) 114 ft^2

D) 186 ft^2

Answer: D

185) A circular swimming pool, 20 feet in diameter, is enclosed by a circular deck that is 4 feet wide. What is the area of the deck? Use $\pi = 3.1416$.

A) 703.7 ft^2

B) 584.3 ft^2

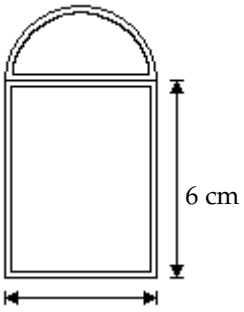
C) 314.2 ft^2

D) 301.6 ft^2

Answer: D

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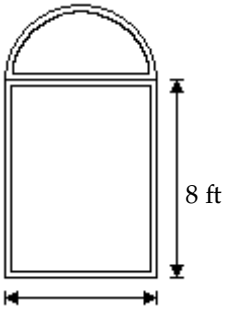
186) Find the perimeter. Approximate the result to the nearest tenth using 3.14 for π.



A) 19.7 cm
B) 22.7 cm
C) 27.4 cm
D) 24.4 cm

Answer: A

187) Find the area of the window. Approximate the result to the nearest tenth using 3.14 for π.



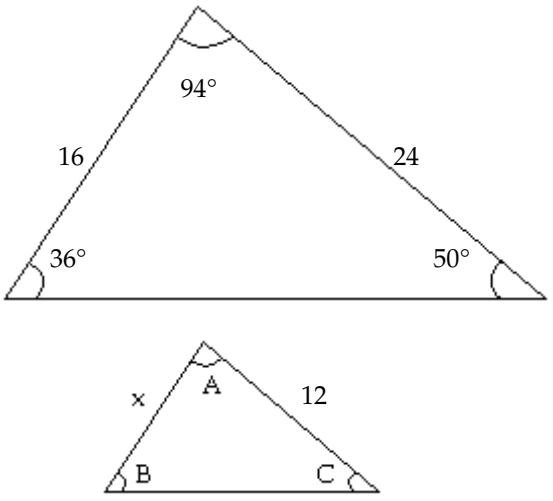
A) 35.1 ft^2
B) 82.2 ft^2
C) 57.1 ft^2
D) 38.3 ft^2

Answer: D

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The triangles are similar. Find the missing length x and the missing angles A, B, C.

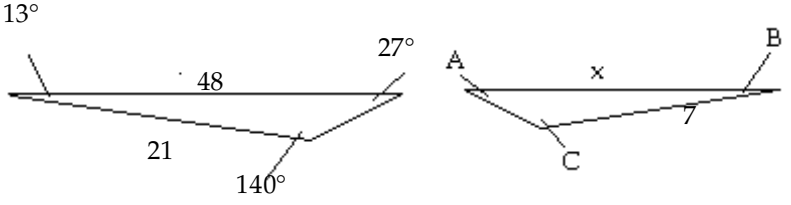
188)



A) x = 16 units; A = 94°; B = 36°; C = 50°
B) x = 8 units; A = 50°; B = 36°; C = 94°
C) x = 8 units; A = 94°; B = 36°; C = 50°
D) x = 16 units; A = 36°; B = 94°; C = 50°

Answer: C

189)



A) x = 16; A = 27; B = 13; C = 140
B) x = 48; A = 27; B = 13; C = 140
C) x = 48; A = 13; B = 27; C = 140
D) x = 16; A = 140; B = 13; C = 27

Answer: A

Solve. If necessary, round to the nearest tenth.

190) A flagpole casts a shadow of 20 feet. Nearby, a 5- foot tree casts a shadow of 3 feet. What is the height of the flagpole?

A) 300 ft
B) 33.3 ft
C) 12 ft
D) 0.8 ft

Answer: B

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191) If a flagpole 9 feet tall casts a shadow that is 12 feet long, find the length of the shadow cast by an antenna which is 18 feet tall.

A) 24 ft
B) 13.5 ft
C) 21 ft
D) 6 ft

Answer: A

192) The zoo has hired a landscape architect to design the triangular lobby of the children's petting zoo. In his scale drawing, the longest side of the lobby is 15 cm. The shortest side of the lobby is 6 cm. The longest side of the actual lobby will be 49 m. How long will the shortest side of the actual lobby be?

A) 122.5 m
B) 0.2 m
C) 19.6 m
D) 1.2 m

Answer: C

193) If a tree 42.5 feet tall casts a shadow that is 17 feet long, find the height of a tree casting a shadow that is 7 feet long.

A) 17.5 ft
B) 32.5 ft
C) 2.8 ft
D) 103.2 ft

Answer: A

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

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

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

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

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

Tell whether the expression is a monomial. If it is, name the variable(s) and coefficient, and give the degree of the monomial.

1) $-15x$

A) Monomial, variable x; coefficient 1; degree - 15
B) Monomial,; variable x; coefficient - 15; degree 0
C) Monomial; variable x; coefficient - 15; degree 1
D) Not a monomial

Answer: C

2) $10x^4$

A) Monomial; variable x; coefficient 10; degree 4
B) Monomial; variable x; coefficient 4; degree 0
C) Monomial; variable x; coefficient 4; degree 10
D) Not a monomial

Answer: A

3) $\frac{4}{x}$

A) Monomial; variable x; coefficient 4; degree 1
B) Monomial; variable x; coefficient 4; degree 0
C) Monomial; variable x; coefficient 4; degree - 1
D) Not a monomial

Answer: D

4) $-5x^{-9}$

A) Monomial; variable x; coefficient - 5; degree 9
B) Monomial; variable x; coefficient - 5; degree - 9
C) Monomial; variable x; coefficient 9; degree - 5
D) Not a monomial

Answer: D

5) $-4xy^3$

A) Monomial; variables x, y; coefficient - 4; degree 3
B) Monomial; variables x, y; coefficient - 4; degree 1
C) Monomial; variables x, y; coefficient - 4; degree 4
D) Not a monomial

Answer: C

6) $5x^2y^5$

A) Monomial; variables x, y; coefficient 5; degree 2
B) Monomial; variables x, y; coefficient 5; degree 5
C) Monomial; variables x, y; coefficient 5; degree 7
D) Not a monomial

Answer: C

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7) $\frac{6x}{y}$

A) Monomial; variables x, y; coefficient 6; degree - 2
B) Monomial; variables x, y; coefficient 6; degree 2
C) Monomial; variables x, y; coefficient 6; degree 1
D) Not a monomial

Answer: D

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

A) Monomial; variables x, y; coefficient 3; degree 2
B) Monomial; variables x, y; coefficient 3; degree 6
C) Monomial; variables x, y; coefficient 3; degree 4
D) Not a monomial

Answer: D

9) $3x^2 - 5$

A) Monomial; variable x; coefficient 3; degree 2
B) Monomial; variable x; coefficient 3; degree 1
C) Monomial; variable x; coefficient 5 ; degree 2
D) Not a monomial

Answer: D

Tell whether the expression is a polynomial. If it is, give its degree.

10) $6x^5 - 4$

A) Polynomial; degree 6
B) Polynomial; degree 4
C) Polynomial; degree 5
D) Not a polynomial

Answer: C

11) $1 - 3x$

A) Polynomial; degree - 3
B) Polynomial; degree 1
C) Polynomial; degree 3
D) Not a polynomial

Answer: B

12) 9

A) Polynomial, degree 0
B) Polynomial, degree 9
C) Polynomial, degree 1
D) Not a polynomial

Answer: A

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13) 2π

A) polynomial, degree 2
B) polynomial, degree 0
C) polynomial, degree 1
D) not a polynomial

Answer: B

14) $6x^2 - \frac{4}{x}$

A) Polynomial; degree 2
B) Polynomial; degree 1
C) Polynomial; degree - 1
D) Not a polynomial

Answer: D

15) $\frac{25}{x} + 1$

A) Polynomial, degree 25
B) Polynomial, degree - 1
C) Polynomial, degree 0
D) Not a Polynomial

Answer: D

16) $-2y^5 - \sqrt{3}$

A) Polynomial; degree 3
B) Polynomial; degree 5
C) Polynomial; degree - 2
D) Not a polynomial

Answer: B

17) $-2z^4 + z$

A) Polynomial; degree 5
B) Polynomial; degree 4
C) Polynomial; degree 1
D) Not a polynomial

Answer: B

18) $\frac{-10x^{10} - 45x^6}{-5x^2}$

A) Polynomial; degree 0
B) Polynomial; degree 6
C) Polynomial; degree 10
D) Not a polynomial

Answer: D

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Add or subtract as indicated. Express the answer as a single polynomial in standard form.

19) $(13x^2 + 4x - 2) + (8x + 2)$

A) $13x^2 + 12x$

B) $25x^3$

C) $13x^2 + 4x + 4$

D) $13x^2 + 12x - 4$

Answer: A

20) $(8x^2 + 8x + 2) + (9x^2 + 5x - 6)$

A) $17x^2 - 13x - 4$

B) $17x^2 + 13x - 4$

C) $17x^2 + 13x + 4$

D) $11x^2 + 13x + 2$

Answer: B

21) $(2x^2 + 13x - 10) - (7x^2 + 16x + 4)$

A) $-5x^2 - 3x + 14$

B) $-5x^2 - 3x - 6$

C) $-5x^2 - 3x - 14$

D) $-5x^2 + 20x - 6$

Answer: C

22) $(2x^5 - 5x^3) + (3x^5 + 3x^3)$

A) $3x^8$

B) $3x^{16}$

C) $5x^5 - 2x^3$

D) $5x^{10} - 2x^6$

Answer: C

23) $(8x^4 - 17x^3) - (12x^4 + 11x^3)$

A) $-4x^4 - 6x^3$

B) $-4x^4 - 28x^3$

C) $20x^4 - 6x^3$

D) $-32x^7$

Answer: B

24) $(5x^5 + 5x^3) + (3x^5 + 2x^3 + 5)$

A) $5x + 7x^5 - 3x^3$

B) $12x^9$

C) $-5x^5 + 7x^3 + 5x$

D) $8x^5 + 7x^3 + 5$

Answer: D

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25) $(8x^2 + 5) - (-x^3 - 10x^2 + 4)$

A) $9x^3 - 10x^2 + 1$

B) $9x^3 - 5x^2 - 4$

C) $x^3 - 2x^2 + 9$

D) $x^3 + 18x^2 + 1$

Answer: D

26) $(6x^6 + 8x^4 + 7) - (8x^6 + 6x^4 - 9)$

A) $16x^{10}$

B) $-2x^6 + 2x^4 - 2$

C) $-2x^6 + 16x^4 - 2$

D) $-2x^6 + 2x^4 + 16$

Answer: D

27) $(6x^5 - 12x^3 - 8) - (8x^3 + 3x^5 - 2)$

A) $3x^5 - 20x^3 - 6$

B) $3x^5 - 20x^3 - 10$

C) $3x^5 - 9x^3 - 10$

D) $-23x^8$

Answer: A

28) $(9x^6 + 6x^5 - 2x) + (6x^6 + 7x^5 - 8x)$

A) $15x^6 + 13x^5 - 10x$

B) $18x^{12}$

C) $4x^6 + 16x^5 - 2x$

D) $15x + 13x^6 - 10x^5$

Answer: A

29) $-1(x^2 + 6x + 1) + (3x^2 - x - 4)$

A) $2x^2 - 6x - 5$

B) $2x^2 - 7x - 5$

C) $-4x^2 - 7x - 5$

D) $2x^2 - 7x - 3$

Answer: B

30) $2(4x^3 + x^2 - 1) - 7(4x^3 - 4x + 2)$

A) $-20x^3 + 2x^2 + 28x - 16$

B) $-20x^3 + 2x^2 + 28x + 16$

C) $-20x^3 + 2x^2 - 28x - 16$

D) $-20x^3 + x^2 + 28x - 16$

Answer: A

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31) $(x^2 + 1) - (4x^2 + 7) + (x^2 + x - 8)$

A) $-3x^2 + x - 14$

B) $-4x^2 + x - 14$

C) $-2x^2 + 8x - 7$

D) $-2x^2 + x - 14$

Answer: D

32) $6(1 - y^3) - 4(1 + y + y^2 + y^3)$

A) $-10y^3 + 4y^2 - 4y - 2$

B) $-10y^3 - 4y^2 - 4y + 2$

C) $-10y^3 - 4 - ay^2 - 4y + 2$

D) $10y^3 - 4y^2 - 4y + 2$

Answer: B

Perform the indicated operations. Express the answer as a single polynomial in standard form.

33) $-2x(-5x - 4)$

A) $18x^2$

B) $-5x^2 + 8x$

C) $10x^2 + 8x$

D) $10x^2 - 4x$

Answer: C

34) $-8x^3(-10x - 3)$

A) $104x^3$

B) $80x + 24$

C) $80x^4 - 3$

D) $80x^4 + 24x^3$

Answer: D

35) $-4x^5(3x^7 - 10)$

A) $28x^5$

B) $-12x^7 + 40$

C) $-12x^{12} - 10$

D) $-12x^{12} + 40x^5$

Answer: D

36) $6x^6(3x^5 + 2x^4 - 6)$

A) $18x^{11} + 12x^{10} - 36x^6$

B) $18x^{11} + 2x^4 - 6$

C) $18x^{11} + 12x^{10}$

D) $18x^5 + 12x^4 - 36$

Answer: A

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37) $(x - 11)(x^2 + 2x - 7)$

A) $x^3 - 9x^2 - 15x - 77$

B) $x^3 + 13x^2 + 15x - 77$

C) $x^3 + 13x^2 + 29x + 77$

D) $x^3 - 9x^2 - 29x + 77$

Answer: D

38) $(5y + 11)(8y^2 - 2y - 10)$

A) $40y^3 + 98y^2 + 72y + 110$

B) $40y^3 - 10y^2 - 50y + 11$

C) $40y^3 + 78y^2 - 72y - 110$

D) $128y^2 - 32y - 160$

Answer: C

Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

39) $(x - 7)(x - 6)$

A) $x^2 - 13x + 42$

B) $x^2 - 14x + 42$

C) $x^2 + 42x - 13$

D) $x^2 - 13x - 13$

Answer: A

40) $(3x - 8)(x + 5)$

A) $3x^2 + 5x - 40$

B) $3x^2 + 7x - 40$

C) $3x^2 - 40x + 7$

D) $3x^2 + 7x + 7$

Answer: B

41) $(-5x - 11)(-3x + 3)$

A) $15x^2 + 18x - 33$

B) $15x^2 + 18x + 18$

C) $-8x^2 + 18x - 33$

D) $-8x^2 + 18x + 18$

Answer: A

42) $(x + 7y)(x + 11y)$

A) $x + 18xy + 77y$

B) $x^2 + 18xy + 77y^2$

C) $x^2 + 15xy + 77y^2$

D) $x^2 + 18xy + 18y^2$

Answer: B

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43) $(x - 8y)(-5x + 6y)$

A) $x^2 + 46xy - 48y^2$

B) $-5x^2 + 46xy + 46y^2$

C) $-5x^2 + 46xy - 48y^2$

D) $x^2 + 46xy + 46y^2$

Answer: C

44) $(3x + 10y)(-3x + 7y)$

A) $-9x^2 - 9xy - 9y^2$

B) $-9x^2 + 21xy + 70y^2$

C) $-9x^2 - 9xy + 70y^2$

D) $-9x^2 - 30xy + 70y^2$

Answer: C

Multiply the polynomials. Express the answer as a single polynomial in standard form.

45) $(x + 12)(x - 12)$

A) $x^2 + 24x - 144$

B) $x^2 - 24x - 144$

C) $x^2 - 24$

D) $x^2 - 144$

Answer: D

46) $(13x + 6)(13x - 6)$

A) $169x^2 - 156x - 36$

B) $169x^2 - 36$

C) $x^2 - 36$

D) $169x^2 + 156x - 36$

Answer: B

47) $(x + 10)^2$

A) $x + 100$

B) $100x^2 + 20x + 100$

C) $x^2 + 100$

D) $x^2 + 20x + 100$

Answer: D

48) $(x - 5)^2$

A) $25x^2 - 10x + 25$

B) $x + 25$

C) $x^2 + 25$

D) $x^2 - 10x + 25$

Answer: D

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49) $(9x + 10)^2$

A) $9x^2 + 180x + 100$

B) $81x^2 + 180x + 100$

C) $81x^2 + 100$

D) $9x^2 + 100$

Answer: B

50) $(x + 12y)(x - 12y)$

A) $x^2 + 24xy - 144y^2$

B) $x^2 - 24y^2$

C) $x^2 - 24xy - 144y^2$

D) $x^2 - 144y^2$

Answer: D

51) $(13y + x)(13y - x)$

A) $169y^2 - 26xy - x^2$

B) $26y^2 - x^2$

C) $169y^2 + 26xy - x^2$

D) $169y^2 - x^2$

Answer: D

52) $(10x - 11)^2$

A) $10x^2 + 121$

B) $100x^2 - 220x + 121$

C) $100x^2 + 121$

D) $10x^2 - 220x + 121$

Answer: B

53) $(a - b)^2$

A) $a^2 - 2ab - b^2$

B) $a^2 - 2ab + b^2$

C) $a^2 - ab + b^2$

D) $a^2 + 2ab + b^2$

Answer: B

54) $(7x + 8y)^2$

A) $49x^2 + 64y^2$

B) $7x^2 + 112xy + 64y^2$

C) $7x^2 + 64y^2$

D) $49x^2 + 112xy + 64y^2$

Answer: D

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55) $(3x - 4y)^2$

A) $9x^2 + 16y^2$

B) $3x^2 - 24xy + 16y^2$

C) $9x^2 - 24xy + 16y^2$

D) $3x^2 + 16y^2$

Answer: C

56) $(x + 3)^3$

A) $x^3 + 3x^2 + 3x + 27$

B) $x^3 + 9x^2 + 9x + 27$

C) $x^3 + 9x^2 + 27x + 27$

D) $x^3 + 9x^2 + 3x + 27$

Answer: C

57) $(5x + 4)^3$

A) $125x^3 + 300x^2 + 300x + 64$

B) $25x^6 + 20x^3 + 4{,}096$

C) $125x^3 + 300x^2 + 240x + 64$

D) $25x^2 + 40x + 16$

Answer: C

Find the quotient and the remainder.

58) $27x^8 - 45x^4$ divided by $9x$

A) $3x^9 - 5x^5$; remainder 0

B) $3x^7 - 5x^3$; remainder 0

C) $3x^8 - 5x^4$; remainder 0

D) $27x^7 - 45x^3$; remainder 0

Answer: B

59) $45x^2 + 35x - 11$ divided by $5x$

A) $45x + 35$; remainder -11

B) $9x + 7$; remainder -11

C) $9x^2 + 7x - \frac{11}{5}$; remainder 0

D) $9x - 4$; remainder 0

Answer: B

60) $x^2 + 10x + 16$ divided by $x + 8$

A) $x^2 + 2$; remainder 0

B) $x^3 - 8$; remainder 0

C) $x + 2$; remainder 0

D) $x - 8$; remainder 0

Answer: C

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61) $7x^2 + 33x - 54$ divided by $x + 6$

A) $7x + 9$; remainder 0
B) $7x - 9$; remainder 0
C) $7x - 9$; remainder 9
D) $x - 9$; remainder 0

Answer: B

62) $x^2 + 3x - 49$ divided by $x + 9$

A) $x + 6$; remainder 5
B) $x - 5$; remainder 6
C) $x - 6$; remainder 5
D) $x - 6$; remainder 0

Answer: C

63) $x^2 + 12x + 27$ divided by $x + 4$

A) $x + 8$; remainder 0
B) $x + 8$; remainder - 5
C) $x + 9$; remainder 0
D) $x + 8$; remainder 5

Answer: B

64) $7x^3 + 24x^2 - 12x + 16$ divided by $x + 4$

A) $7x^2 - 4x + 4$; remainder 0
B) $x^2 + 4x + 7$; remainder 0
C) $x^2 + 5x + 6$; remainder 0
D) $7x^2 + 4x + 4$; remainder 0

Answer: A

65) $-20x^3 - 41x^2 - 35x + 5$ divided by $5x + 4$

A) $x^2 - 3$; remainder - 5
B) $-4x^2 - 5x - 3$; remainder 17
C) $-4x^2 - 5x - 3$; remainder 0
D) $-4x^2 - 5x - 3$; remainder 20

Answer: B

66) $5x^3 - 7x^2 + 7x - 8$ divided by $5x - 2$

A) $x^2 + x - 1$; remainder - 6
B) $x^2 - x + 1$; remainder 10
C) $x^2 - x + 1$; remainder 6
D) $x^2 - x + 1$; remainder - 6

Answer: D

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67) $x^4 + 625$ divided by $x - 5$

A) $x^3 - 5x^2 + 25x - 125$; remainder 1,250

B) $x^3 + 5x^2 + 25x + 125$; remainder 625

C) $x^3 + 5x^2 + 25x + 125$; remainder 1,250

D) $x^3 + 5x^2 + 25x + 125$; remainder 0

Answer: C

68) $6x^3 - 13x^2 - 4x + 35$ divided by $-2x + 3$

A) $x^2 + 5$; remainder 2

B) $-3x^2 + 2x + 5$; remainder 0

C) $-3x^2 + 2x + 5$; remainder 20

D) $-3x^2 + 2x + 5$; remainder 23

Answer: C

69) $20x^3 - 29x^2 + 15x + 12$ divided by $5x - 1$

A) $4x^2 - 5x + 2$; remainder 0

B) $4x^2 - 5x + 2$; remainder 17

C) $x^2 + 2$; remainder -5

D) $4x^2 - 5x + 2$; remainder 14

Answer: D

70) $x^4 + 8x^2 + 9$ divided by $x^2 + 1$

A) $x^2 + 7x + 1$; remainder 2

B) $x^2 + 7x + \frac{1}{2}$; remainder 0

C) $x^2 + 7$; remainder 0

D) $x^2 + 7$; remainder 2

Answer: D

71) $x^4 + 81$ divided by $x - 3$

A) $x^3 - 3x^2 + 9x - 27$; remainder 162

B) $x^3 + 3x^2 + 9x + 27$; remainder 81

C) $x^3 + 3x^2 + 9x + 27$; remainder 0

D) $x^3 + 3x^2 + 9x + 27$; remainder 162

Answer: D

72) $x^2 - 121a^2$ divided by $x - 11a$

A) $x^2 - 22xa$

B) $x + 11a$

C) $x - 11a$

D) $x^2 + 22xa$

Answer: B

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Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

73) $(x + 8y)(x - 3y)$

A) $x^2 + 5xy - 24y^2$

B) $x^2 + 5xy + 5y^2$

C) $x + 5xy - 24y$

D) $x^2 + 2xy - 24y^2$

Answer: A

74) $(-5x + 11y)(-3x + 11y)$

A) $15x^2 - 33xy + 121y^2$

B) $15x^2 - 88xy + 121y^2$

C) $15x^2 - 55xy + 121y^2$

D) $15x^2 - 88xy - 88y^2$

Answer: B

Multiply the polynomials using the special product formulas. Express the answer as a single polynomial in standard form.

75) $(x + 5y)(x - 5y)$

A) $x^2 - 10xy - 25y^2$

B) $x^2 + 10xy - 25y^2$

C) $x^2 - 10y^2$

D) $x^2 - 25y^2$

Answer: D

76) $(7x + y)(7x - y)$

A) $49x^2 - y^2$

B) $49x^2 + 14xy - y^2$

C) $14x^2 - y^2$

D) $49x^2 - 14xy - y^2$

Answer: A

77) $(3x + 4y)(3x - 4y)$

A) $9x^2 + 24xy - 16y^2$

B) $9x^2 - 24xy - 16y^2$

C) $6x^2 - 8y^2$

D) $9x^2 - 16y^2$

Answer: D

78) $(x - y)^2$

A) $x^2 - 2xy + y^2$

B) $x^2 - y^2$

C) $x^2 - 2x^2y^2 + y^2$

D) $x^2 - xy + y^2$

Answer: A

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79) $(x - 9y)^2$

A) $x^2 - 18xy + 81y^2$

B) $x^2 + 18xy + 81y^2$

C) $x^2 - y^2$

D) $x^2 - 9xy + 81y^2$

Answer: A

80) $(12x - y)^2$

A) $144x^2 + y^2$

B) $144x^2 - 24xy - 2y^2$

C) $144x^2 - 24xy + y^2$

D) $144x^2 - 12xy + y^2$

Answer: C

81) $(2x + 9y)^2$

A) $2x^2 + 36xy + 81y^2$

B) $4x^2 + 36xy + 81y^2$

C) $4x^2 + 81y^2$

D) $2x^2 + 81y^2$

Answer: B

82) $(6x - 5y)^2$

A) $6x^2 + 25y^2$

B) $36x^2 - 60xy + 25y^2$

C) $36x^2 + 25y^2$

D) $6x^2 - 60xy + 25y^2$

Answer: B

Factor the polynomial by removing the common monomial factor.

83) $9x - 9$

A) $9(x + 1)$

B) $x(x - 9)$

C) $9(x - 1)$

D) $x(x + 9)$

Answer: C

84) $3x^2 - 9x$

A) $3x^2(x - 3)$

B) $3x(x + 3)$

C) $3(x^2 - 3x)$

D) $3x(x - 3)$

Answer: D

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Factor the difference of two squares.

85) $x^2 - 4$

A) $(x + 4)(x - 4)$

B) $(x^2 + 2)(x^2 - 2)$

C) $(x - 2)(x - 2)$

D) $(x + 2)(x - 2)$

Answer: D

86) $36x^2 - 1$

A) prime

B) $(6x - 1)^2$

C) $(6x - 1)(6x + 1)$

D) $(6x + 1)^2$

Answer: C

87) $4 - x^2$

A) $(2 + x)^2$

B) prime

C) $(2 - x)(2 + x)$

D) $(2 - x)^2$

Answer: C

88) $4x^2 - 49$

A) $(2x + 7)(2x - 7)$

B) $(4x + 1)(x - 49)$

C) $(2x - 7)^2$

D) $(2x + 7)^2$

Answer: A

Factor the sum or difference of two cubes.

89) $x^3 - 125$

A) $(x + 5)(x^2 - 5x + 25)$

B) $(x - 5)(x^2 + 5x + 25)$

C) $(x - 5)(x^2 + 25)$

D) $(x + 125)(x^2 - 1)$

Answer: B

90) $x^3 + 512$

A) $(x - 512)(x^2 - 1)$

B) $(x + 8)(x^2 - 8x + 64)$

C) $(x + 8)(x^2 + 64)$

D) $(x - 8)(x^2 + 8x + 64)$

Answer: B

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91) $729y^3 - 1$

A) $(9y - 1)(81y^2 + 9y + 1)$

B) $(9y - 1)(81y^2 + 1)$

C) $(9y + 1)(81y^2 - 9y + 1)$

D) $(729y - 1)(y^2 + 9y + 1)$

Answer: A

92) $125x^3 + 1$

A) $(5x + 1)(25x^2 - 5x + 1)$

B) $(5x + 1)(25x^2 - 5x - 1)$

C) $(5x + 1)(25x^2 + 5x + 1)$

D) $(5x + 1)(25x^2 + 1)$

Answer: A

93) $8 - x^3$

A) $(2 - x)(4 + 2x + x^2)$

B) $(2 + x)(4 - x^2)$

C) $(2 + x)(4 - 2x + x^2)$

D) $(2 - x)(4 + x^2)$

Answer: A

94) $512x^3 - 343$

A) $(8x + 7)(64x^2 - 56x + 49)$

B) $(8x - 7)(64x^2 + 49)$

C) $(8x - 7)(64x^2 + 56x + 49)$

D) $(512x - 7)(x^2 + 56x + 49)$

Answer: C

95) $343x^3 + 729$

A) $(7x + 9)(49x^2 - 63x + 81)$

B) $(7x - 9)(49x^2 + 63x + 81)$

C) $(7x + 9)(49x^2 + 63x + 81)$

D) $(343x - 9)(x^2 + 63x + 81)$

Answer: A

96) $8 - 125x^3$

A) $(2 - 5x)(4 + 10x + 25x^2)$

B) $(2 + 5x^2)(4 - 10x + 25x^2)$

C) $(2 - 5x)(4 + 25x^2)$

D) $(8 - 5x)(1 + 10x + 25x^2)$

Answer: A

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Factor completely. If the polynomial cannot be factored, say it is prime.

97) $3x^2 - 75$

A) prime

B) $3(x - 5)^2$

C) $3(x + 5)^2$

D) $3(x + 5)(x - 5)$

Answer: D

98) $x^4 - 64$

A) $(x^2 + 8)(x^2 - 8)$

B) $(x^2 - 8)^2$

C) $(x^2 + 8)^2$

D) prime

Answer: A

99) $x^4 - 256$

A) $(x^2 + 16)^2$

B) $(x^2 - 16)^2$

C) prime

D) $(x^2 + 16)(x + 4)(x - 4)$

Answer: D

100) $(x + 8)^2 - 49$

A) $(x + 15)(x + 1)$

B) $(x - 1)(x - 15)$

C) $x^2 + 16x + 15$

D) $(x + 57)(x - 41)$

Answer: A

101) $(x - 2)^2 - 9$

A) $(x - 5)^2$

B) $(x + 7)(x - 11)$

C) $(x + 1)(x - 5)$

D) $(x - 1)(x + 5)$

Answer: C

102) $x^9 + 1$

A) $(x^3 + 1)(x^6 - x^3 + 1)$

B) $(x - 1)(x + 1)(x^6 - x^3 + 1)$

C) $(x + 1)(x^2 - x + 1)(x^6 - x^3 + 1)$

D) $(x - 1)(x^2 + x + 1)(x^6 + x^3 + 1)$

Answer: C

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103) $8x^4 - x$

A) $x(2x - 1)(4x^2 + 2x + 1)$

B) $x(2x + 1)(4x^2 - 2x + 1)$

C) $x(8x - 1)(x^2 + 2x + 1)$

D) $x(2x - 1)(4x^2 + 1)$

Answer: A

104) $(2x - 2)^3 + 125$

A) $(2x - 7)(4x^2 + 2x + 19)$

B) $(2x + 3)(4x^2 - 18x + 39)$

C) $(2x + 3)(4x^2 + 2x + 19)$

D) $(2x + 3)(4x^2 + 2x + 39)$

Answer: B

105) $(7 - x)^3 - x^3$

A) $(7 + 2x)(x^2 - 7x + 49)$

B) $(7 - x)(x^2 - 7x + 49)$

C) $(7 - 2x)(x^2 - 7x + 49)$

D) $(7 - 2x)(3x^2 - 7x + 49)$

Answer: C

Factor the perfect square.

106) $x^2 + 40x + 400$

A) $(x + 20)^2$

B) $x^2 + 40x + 400$

C) $(x - 20)^2$

D) $(x + 20)(x - 20)$

Answer: A

107) $x^2 + 12x + 36$

A) $(x + 6)(x - 6)$

B) $(x - 6)^2$

C) $(x + 12)(x - 12)$

D) $(x + 6)^2$

Answer: D

108) $25x^2 - 20x + 4$

A) $(5x - 3)^2$

B) $(5x - 2)^2$

C) $(5x + 2)(5x - 2)$

D) $(5x + 2)^2$

Answer: B

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109) $25x^2 + 90x + 81$

A) $(5x + 9)(5x - 9)$

B) $(5x - 10)^2$

C) $(5x - 9)^2$

D) $(5x + 9)^2$

Answer: D

110) $x^4 - 14x^2 + 49$

A) $(x^2 + 7)^2$

B) $(x - 7)(x + 7)$

C) $(x - 7)^2$

D) $(x^2 - 7)^2$

Answer: D

Factor completely. If the polynomial cannot be factored, say it is prime.

111) $98x^2 - 112x + 32$

A) $2(7x - 4)(7x + 4)$

B) $2(7x + 4)^2$

C) $2(7x - 4)^2$

D) prime

Answer: C

112) $x^3 + 12x^2 + 36x$

A) $x(x - 6)^2$

B) $x(x + 6)(x - 6)$

C) $x(x + 6)^2$

D) prime

Answer: C

Factor the polynomial.

113) $x^2 - x - 30$

A) $(x + 6)(x - 5)$

B) $(x + 1)(x - 30)$

C) $(x + 5)(x - 6)$

D) prime

Answer: C

114) $x^2 - 3x - 54$

A) $(x + 6)(x - 9)$

B) $(x - 6)(x + 1)$

C) $(x - 6)(x - 9)$

D) prime

Answer: A

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115) $x^2 + 7x - 44$

A) $(x - 11)(x + 1)$
B) $(x - 11)(x + 4)$
C) $(x + 11)(x - 4)$
D) prime

Answer: C

116) $x^2 + 49$

A) $(x + 7)^2$
B) $(x - 7)^2$
C) $(x + 7)(x - 7)$
D) prime

Answer: D

Factor completely. If the polynomial cannot be factored, say it is prime.

117) $2x^2 - 2x - 12$

A) $2(x + 2)(x - 3)$
B) $2(x - 2)(x + 3)$
C) $(2x + 4)(x - 3)$
D) prime

Answer: A

118) $3x^2 - 18x + 24$

A) $(x - 4)(3x - 6)$
B) $3(x - 8)(x + 1)$
C) $3(x - 4)(x - 2)$
D) prime

Answer: C

119) $3x^3 + 6x^2 - 24x$

A) $(x - 2)(3x^2 + 12)$
B) $3x(x + 2)(x - 4)$
C) $3x(x - 2)(x + 4)$
D) $(3x^2 + 6x)(x - 4)$

Answer: C

120) $(x + 4)^2 - 5(x + 4) + 6$

A) $(x + 7)(x + 6)$
B) $(x^2 + 4x - 3)(x^2 + 4x - 2)$
C) $(x^2 - 4x + 3)(x^2 - 4x + 2)$
D) $(x + 1)(x + 2)$

Answer: D

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121) $x^4 + 2x^2 - 35$

A) $(x^2 + 5)(x^2 + 7)$

B) $(x^2 + 5)(x^2 + 1)$

C) $(x^2 - 5)(x^2 + 7)$

D) Prime

Answer: C

Factor the polynomial by grouping.

122) $x^2 + 4x + 7x + 28$

A) $(x - 4)(x - 7)$

B) $(x - 4)(x + 7)$

C) $(x + 4)(x + 7)$

D) prime

Answer: C

123) $2x^2 + 9x + 18x + 81$

A) $(2x + 9)(9x + 2)$

B) $(x + 9)(2x + 9)$

C) $(2x + 9)(2x + 9)$

D) prime

Answer: B

124) $15x^2 - 6x + 10x - 4$

A) $(3x - 2)(5x + 2)$

B) $(15x - 2)(x + 2)$

C) $(15x + 2)(x - 2)$

D) $(3x + 2)(5x - 2)$

Answer: D

125) $10x^2 + 15x - 8x - 12$

A) $(5x + 4)(2x - 3)$

B) $(10x + 4)(x - 3)$

C) $(5x - 4)(2x + 3)$

D) $(10x - 4)(x + 3)$

Answer: C

Factor completely. If the polynomial cannot be factored, say it is prime.

126) $x^3 - 4x + 5x^2 - 20$

A) $(x - 2)^2(x + 5)$

B) $(x + 2)(x - 2)(x + 5)$

C) $(x^2 - 4)(x + 5)$

D) prime

Answer: B

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127) $4x^2 - 24x - 16x + 96$

A) $(x - 6)(x - 4)$

B) $(x - 6)(4x - 16)$

C) $4(x - 6)(x - 4)$

D) $4(x + 6)(x + 4)$

Answer: C

128) $2y^3 + 6y^2 - 14y^2 - 42y$

A) $(y + 3)(2y^2 - 14y)$

B) $2y(y - 3)(y + 7)$

C) $(y + 3)(y - 7)$

D) $2y(y + 3)(y - 7)$

Answer: D

129) $15x^4 + 10x^2 - 6x^2 - 4$

A) $(5x^4 - 2)(3x + 2)$

B) $(15x^2 + 2)(x^2 - 2)$

C) $(5x^2 - 2)(3x^2 + 2)$

D) $(5x^2 + 2)(3x^2 - 2)$

Answer: C

130) $15x^2 - 9xy - 20xy + 12y^2$

A) $(3x - 4y)(5x - 3y)$

B) $(3x + 4y)(5x - 3y)$

C) $(15x - 4y)(x - 3y)$

D) $(3x - 4)(5x - 3)$

Answer: A

131) $12x^3 + 8x^2y - 15xy^2 - 10y^3$

A) $(12x^2 - 5y^2)(x + 2y)$

B) $(4x^2 + 5y^2)(3x - 2y)$

C) $(4x^2 - 5y)(3x + 2y)$

D) $(4x^2 - 5y^2)(3x + 2y)$

Answer: D

An expression that occurs in calculus is given. Factor completely.

132) $2(x + 6)(x - 5)^3 + (x + 6)^2 \cdot 6(x - 5)^2$

A) $(x + 6)(x - 5)^2(4x + 13)$

B) $(x + 6)(x - 5)^2(8x + 26)$

C) $2(x + 5)(x - 6)^2(4x + 13)$

D) $2(x + 6)(x - 5)^2(4x + 13)$

Answer: D

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133) $(2x + 1)^2 + 3(2x + 1) - 4$

A) $2x(2x + 5)$

B) $2x - 1$

C) $2x - 6$

D) $2x(2x + 1)$

Answer: A

134) $3(x + 5)^2(2x - 1)^2 + 4(x + 5)^3(2x - 1)$

A) $(x + 5)^2(10x + 17)$

B) $(x + 5)(2x - 1)(10x + 17)$

C) $(x + 5)^2(2x - 1)(10x + 17)$

D) $(x + 5)^2(2x - 1)(x + 17)$

Answer: C

Factor the polynomial.

135) $4x^2 + 12x + 9$

A) $(4x + 3)(x + 3)$

B) $(2x + 3)(2x + 3)$

C) $(2x - 3)(2x - 3)$

D) prime

Answer: B

136) $9y^2 + 18y + 8$

A) $(9y + 4)(y + 2)$

B) $(3y + 4)(3y + 2)$

C) $(3y - 4)(3y - 2)$

D) prime

Answer: B

137) $20z^2 + 7z - 6$

A) $(20z + 3)(z - 2)$

B) $(4z + 3)(5z - 2)$

C) $(4z - 3)(5z + 2)$

D) prime

Answer: B

138) $20z^2 - 3z - 9$

A) $(4z + 3)(5z - 3)$

B) $(20z - 3)(z + 3)$

C) $(4z - 3)(5z + 3)$

D) prime

Answer: C

139) $9x^2 - 18xt + 8t^2$

A) $(3x + 2t)(3x + 4t)$

B) $(9x - 2t)(x - 4t)$

C) $(3x - 2t)(3x - 4t)$

D) prime

Answer: C

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140) $15z^2 - 4z - 4$

A) $(15z - 2)(z + 2)$
B) $(3z + 2)(5z - 2)$
C) $(3z - 2)(5z + 2)$
D) prime

Answer: C

141) $x^2 - x - 35$

A) $(x + 5)(x - 7)$
B) $(x - 35)(x + 1)$
C) $(x - 5)(x + 7)$
D) prime

Answer: D

Factor completely. If the polynomial cannot be factored, say it is prime.

142) $27x^2 - 117x - 90$

A) $(27x + 18)(x - 5)$
B) $9(3x - 2)(x + 5)$
C) $9(3x + 2)(x - 5)$
D) prime

Answer: C

143) $18x^2 - 63x - 36$

A) $9(2x - 1)(x + 4)$
B) $(18x - 9)(x + 4)$
C) $9(2x + 1)(x - 4)$
D) prime

Answer: C

144) $10y^2 + 45y - 25$

A) $(10y - 5)(y + 5)$
B) $5(2y - 1)(y + 5)$
C) $5(2y + 1)(y - 5)$
D) prime

Answer: B

145) $10x^2 - 34x + 28$

A) $2(5x - 7)(x - 2)$
B) $(5x - 7)(2x - 2)$
C) $2(5x + 7)(x + 2)$
D) prime

Answer: A

146) $12x^3 + 7x^2 - 12x$

A) $x^2(3x + 4)(4x - 3)$
B) $x(3x + 4)(4x - 3)$
C) $x(4x + 4)(3x - 3)$
D) $(3x^2 + 4)(4x - 3)$

Answer: B

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147) $24x^2 + 68x + 48$

A) $(2x + 1)(3x + 12)$

B) $4(12x + 3)(x + 4)$

C) $4(2x + 1)(3x + 12)$

D) $4(2x + 3)(3x + 4)$

Answer: D

148) $12(x - 7)^2 - 19(x - 7) - 21$

A) $(3x + 7)(4x + 3)$

B) $(3x + 14)(4x + 10)$

C) $(3x + 24)(4x + 35)$

D) $(3x - 28)(4x - 25)$

Answer: D

149) $15x^4 + 16x^2 + 4$

A) $(5x^2 - 2)(3x^2 - 2)$

B) $(3x^2 + 2)(5x^2 + 2)$

C) $(3x^2 + 1)(5x^2 + 4)$

D) $(15x^2 + 2)(x^2 + 2)$

Answer: B

150) $6x^4 - 5x^2 - 6$

A) $(2x^2 + 1)(3x^2 - 6)$

B) $(3x - 2)(2x + 3)$

C) $(2x^2 - 3)(3x^2 + 2)$

D) $(6x^2 - 3)(x^2 + 2)$

Answer: C

151) $15x^6 + 8x^3 - 16$

A) $(3x^3 + 1)(5x^3 - 16)$

B) $15(x^3 - 4)(x^3 + 4)$

C) $(3x^3 + 4)(5x^3 - 4)$

D) $(5x^3 + 4)(3x^3 - 4)$

Answer: C

152) $7y^6 - 39y^3 + 20$

A) $(7y^3 - 5y^2 + y - 4)(y^3 - 4y^2 + y - 5)$

B) $y^4(7y - 4)(y - 5)$

C) $y^2(7y^2 - 4)(y^2 - 5)$

D) $(7y^3 - 4)(y^3 - 5)$

Answer: D

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What number should be added to complete the square of the expression?

153) $x^2 + 16x$

A) 32
B) 128
C) 64
D) 8

Answer: C

154) $x^2 - 6x$

A) 5
B) - 3
C) 18
D) 9

Answer: D

155) $x^2 + \frac{2}{3}x$

A) $\frac{1}{9}$

B) $\frac{2}{9}$

C) $\frac{1}{6}$

D) $\frac{4}{9}$

Answer: A

156) $x^2 - \frac{4}{5}x$

A) $\frac{4}{25}$

B) $\frac{16}{25}$

C) $-\frac{1}{5}$

D) $-\frac{8}{25}$

Answer: A

157) $x^2 - x$

A) 1
B) $\frac{1}{4}$
C) $\frac{1}{2}$
D) 4

Answer: B

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Use synthetic division to find the quotient and the remainder.

158) $x^2 + 12x + 30$ is divided by $x + 4$

A) $x + 9$; remainder 0

B) $x + 8$; remainder 0

C) $x + 8$; remainder - 2

D) $x + 8$; remainder 2

Answer: C

159) $x^3 - x^2 + 4$ is divided by $x + 2$

A) $x^2 + x + 2$; remainder - 8

B) $3x^2 - 4x + 2$; remainder 0

C) $x^2 - 3x + 6$; remainder 2

D) $x^2 - 3x + 6$; remainder - 8

Answer: D

160) $x^5 + x^3 + 2$ is divided by $x + 3$

A) $x^4 - 3x^3 + 9x^2 - 26x + 78$; remainder - 232

B) $x^4 - 2x^2$; remainder 8

C) $x^4 - 3x^3 + 10x^2 - 30x + 90$; remainder - 268

D) $x^4 - 2$; remainder 8

Answer: C

161) $3x^3 + 16x^2 - 14x - 12$ is divided by $x + 6$

A) $\frac{1}{2}x^2 + \frac{8}{3}x - \frac{7}{3}$; remainder 0

B) $3x^2 - 2x - 2$; remainder 0

C) $3x^2\, x + \frac{8}{3} - 2$; remainder0

D) $-3x^2 - 6x - 2$; remainder 0

Answer: B

162) $x^5 - 2x^4 - 12x^3 - 13x^2 - 12x + 11$ is divided by $x - 5$

A) $x^4 + 3x^3 + 3x^2 + 2x + 1$; remainder 0

B) $x^4 + 3x^3 + 3x^2 + 2x - 2$; remainder 1

C) $x^4 + 3x^3 + 3x^2 + 2x + 2$; remainder 3

D) $x^3 + 3x^2 + 3x + 2$; remainder 1

Answer: B

163) $x^4 - 4$ is divided by $x - 2$

A) $x^3 + 2x^2 + 4x + 8$; remainder 12

B) $x^3 + 4x^2 + 16x + 64$; remainder 254

C) $x^3 + 6x^2 + 4x + 2$; remainder 12

D) $x^3 + 2x^2 + 4x + 8$; remainder 254

Answer: A

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164) $x^4 + 16$ is divided by $x - 2$

A) $x^3 + 2x^2 + 4x + 8$; remainder 16

B) $x^3 + 2x^2 + 4x + 8$; remainder 32

C) $x^3 - 2x^2 + 4x - 8$; remainder 32

D) $x^3 + 2x^2 + 4x + 8$; remainder 0

Answer: B

165) $6x^5 - 5x^4 + x - 4$ is divided by $x + \frac{1}{2}$

A) $6x^4 - 8x^3 + 4x^2 - 2x + 2$; remainder - 5

B) $6x^4 - 8x^3 + 5$; remainder $-\frac{13}{2}$

C) $6x^4 - 2x^3 + x^2 - \frac{1}{2}x + \frac{5}{4}$; remainder $-\frac{37}{8}$

D) $6x^4 - 2x^3 - x^2 + \frac{1}{2}x + \frac{5}{4}$; remainder $-\frac{27}{8}$

Answer: A

Use synthetic division to determine whether x - c is a factor of the given polynomial.

166) $x^3 - 13x^2 + 46x - 48$; $x - 2$

A) Yes

B) No

Answer: A

167) $x^3 + 12x^2 + 29x - 42$; $x - 4$

A) Yes

B) No

Answer: B

168) $x^3 - 7x^2 - 9x + 63$; $x + 3$

A) Yes

B) No

Answer: A

169) $x^3 - 11x^2 + 12x + 80$; $x + 5$

A) Yes

B) No

Answer: B

170) $4x^3 - 17x^2 + 23x - 10$; $x - 5$

A) Yes

B) No

Answer: B

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171) $4x^3 - 27x^2 + 8x + 60; x + 4$

A) Yes
B) No

Answer: B

172) $3x^3 - 22x^2 - 3x + 70; x - 7$

A) Yes
B) No

Answer: A

173) $3x^3 - 20x^2 - 9x + 126; x - 6$

A) Yes
B) No

Answer: A

174) $6x^5 - 5x^4 + x - 4; x + \frac{1}{2}$

A) Yes
B) No

Answer: B

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

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

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

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151) C
152) D
153) C
154) D
155) A
156) A
157) B
158) C
159) D
160) C
161) B
162) B
163) A
164) B
165) A
166) A
167) B
168) A
169) B
170) B
171) B
172) A
173) A
174) B

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

Reduce the rational expression to lowest terms.

1) $\frac{x^2 - 36}{x - 6}$

A) $\frac{1}{x + 6}$

B) $x - 6$

C) $x + 6$

D) $\frac{1}{x - 6}$

Answer: C

2) $\frac{4x + 2}{12x^2 + 26x + 10}$

A) $\frac{1}{3x + 5}$

B) $\frac{4x}{3x + 5}$

C) $\frac{4x + 3}{3x + 26}$

D) $\frac{4x + 2}{12x^2 + 26x + 10}$

Answer: A

3) $\frac{y^2 + 11y + 28}{y^2 + 13y + 42}$

A) $\frac{11y + 28}{13y + 42}$

B) $\frac{11y + 2}{13y + 3}$

C) $-\frac{y^2 + 11y + 28}{y^2 + 13y + 42}$

D) $\frac{y + 4}{y + 6}$

Answer: D

4) $\frac{3x^2 - 27x + 54}{x - 6}$

A) $\frac{3x^2 - 27x + 54}{x - 6}$

B) $3x - 9$

C) $3x^2 - 36$

D) $\frac{1}{x - 6}$

Answer: B

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5) $\frac{x^2 + 5x + 6}{x^2 + 9x + 18}$

A) $\frac{5x + 6}{9x + 18}$

B) $\frac{x + 2}{x + 6}$

C) $\frac{5x + 1}{9x + 3}$

D) $-\frac{x^2 + 5x + 6}{x^2 + 9x + 18}$

Answer: B

6) $\frac{2x^2 - 3x - 2}{3x^2 - 11x + 10}$

A) $\frac{2x - 2}{3x + 2}$

B) $\frac{x + 2}{x - 4}$

C) $\frac{2x + 1}{3x - 5}$

D) $\frac{x - 1}{x + 5}$

Answer: C

7) $\frac{10x^2 + 30x^3}{9x + 27x^2}$

A) $\frac{10x}{9}$

B) $\frac{10 + 30x^3}{9x + 27}$

C) $\frac{10x^2 + 30x^3}{9x + 27x^2}$

D) $\frac{10}{9}$

Answer: A

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8) $\frac{y^3 - 64}{y - 4}$

A) $\frac{y^3 - 64}{y - 4}$

B) $\frac{1}{y - 4}$

C) $y^2 - 16$

D) $y^2 + 4y + 16$

Answer: D

An expression that occurs in calculus is given. Reduce the expression to lowest terms.

9) $\frac{(x^2 + 2) \cdot 3 - (3x + 4) \cdot 3x}{(x^2 + 2)^3}$

A) $\frac{-9x^2 - 12x + 3}{(x^2 + 2)^2}$

B) $\frac{-12x^2 - 12x + 6}{(x^2 + 2)^3}$

C) $\frac{6x^2 + 12x - 6}{(x^2 + 2)^3}$

D) $\frac{-6x^2 - 12x + 6}{(x^2 + 2)^3}$

Answer: D

10) $\frac{(2x + 5)4x - 2x^2(2)}{(2x + 5)^2}$

A) $\frac{4(x + 5)}{(2x + 5)^2}$

B) $\frac{4x}{(2x + 5)^2}$

C) $\frac{2x}{(x + 5)^2}$

D) $\frac{4x(x + 5)}{(2x + 5)^2}$

Answer: D

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Perform the indicated operations and simplify the result. Leave the answer in factored form.

11) $\frac{4x}{8x+4} \cdot \frac{10x+5}{2}$

A) $\frac{x}{2}$

B) $\frac{5x}{2}$

C) $\frac{5x}{8}$

D) $\frac{5}{2}$

Answer: B

12) $\frac{8x-8}{x} \cdot \frac{2x^2}{9x-9}$

A) $\frac{16x}{9}$

B) $\frac{72x^2+144x+72}{2x^3}$

C) $\frac{16x^3-16x^2}{9x^2-9x}$

D) $\frac{9}{16x}$

Answer: A

13) $\frac{x^3+1}{x^3-x^2+x} \cdot \frac{7x}{-42x-42}$

A) $-\frac{x^3+1}{6(x+1)}$

B) $\frac{x+1}{6(-x-1)}$

C) $-\frac{x^2+1}{6}$

D) $-\frac{1}{6}$

Answer: D

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14) $\frac{x^2 + 11x + 18}{x^2 + 8x + 12} \cdot \frac{x^2 + 14x + 48}{x^2 + 17x + 72}$

A) $\frac{x + 6}{x + 8}$

B) $\frac{x + 9}{x + 6}$

C) 1

D) $\frac{1}{x + 8}$

Answer: C

15) $\frac{x^2 - 5x + 4}{x^2 - 8x + 15} \cdot \frac{x^2 - 11x + 30}{x^2 - 14x + 40}$

A) $\frac{(x^2 - 5x + 4)(x^2 - 11x + 30)}{(x^2 - 8x + 15)(x^2 - 14x + 40)}$

B) $\frac{(x - 1)}{(x - 10)}$

C) $\frac{(x - 1)(x - 6)}{(x - 3)(x - 10)}$

D) $\frac{(x + 1)(x + 6)}{(x + 3)(x + 10)}$

Answer: C

16) $\frac{x^2 + 14x + 48}{x^2 + 15x + 56} \cdot \frac{x^2 + 7x}{x^2 - 2x - 48}$

A) $\frac{1}{x - 8}$

B) $\frac{x(x + 7)}{x - 8}$

C) $\frac{x}{x - 8}$

D) $\frac{x}{x^2 + 15x + 56}$

Answer: C

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17) $\frac{9x^4 - 72x}{3x^2 - 12} \cdot \frac{x^2 + x - 2}{4x^3 + 8x^2 + 16x}$

A) $\frac{3x(x - 1)}{4}$

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

C) $\frac{3x(x - 1)(x - 2)^2}{4(x + 2)^2}$

D) $\frac{3(x - 1)}{4}$

Answer: D

18) $\frac{x^2 + 14x + 45}{x^2 + 17x + 72} \cdot \frac{x^2 + 8x}{x^2 + 12x + 35}$

A) $\frac{x}{x^2 + 17x + 72}$

B) $\frac{1}{x + 7}$

C) $\frac{x^2 + 8x}{x + 7}$

D) $\frac{x}{x + 7}$

Answer: D

19) $\frac{10x^2 - 3x - 4}{5x^2 - x - 4} \cdot \frac{15x^2 + 12x}{1 - 4x^2}$

A) $\frac{3x(5x + 4)}{(1 - 2x)(x - 1)}$

B) $\frac{3x}{(1 - 2x)(x - 1)}$

C) $\frac{3x(5x - 4)}{(1 - 2x)(x - 1)}$

D) $\frac{(5x + 4)(5x - 4)}{(1 - 2x)(x - 1)}$

Answer: C

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20)

$$\frac{\frac{6x - 6}{5}}{\frac{2x - 2}{45}}$$

A) 27

B) $\frac{12(x - 1)^2}{225}$

C) $\frac{9(6x - 6)}{2x - 2}$

D) $\frac{1}{27}$

Answer: A

21)

$$\frac{\frac{2x - 2}{x}}{\frac{7x - 7}{9x^2}}$$

A) $\frac{7}{18x}$

B) $\frac{18x}{7}$

C) $\frac{14(x + 1)^2}{9x^3}$

D) $\frac{18x^2(x - 1)}{7x(x - 1)}$

Answer: B

22)

$$\frac{\frac{x^2 + 9x + 18}{x^2 + 11x + 24}}{\frac{x^2 + 6x}{x^2 + 16x + 64}}$$

A) $x + 8$

B) $\frac{x + 8}{x(x + 8)}$

C) $\frac{x}{(x + 8)(x + 3)}$

D) $\frac{x + 8}{x}$

Answer: D

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23)

$$\frac{\frac{x^2 - 14x + 49}{2x - 14}}{\frac{6x - 42}{12}}$$

A) $\frac{(x - 7)^2}{4}$

B) $\frac{x^2 - 14x + 49}{(x - 7)^2}$

C) 1

D) 12

Answer: C

24)

$$\frac{\frac{1}{x + 6}}{\frac{5}{x^2 - 36}}$$

A) $\frac{x - 6}{5}$

B) $\frac{5}{x - 6}$

C) $\frac{x + 6}{5}$

D) $x - 6$

Answer: A

25)

$$\frac{\frac{x^2 - 81}{x}}{\frac{x - 9}{x - 7}}$$

A) $\frac{(x - 9)(x^2 - 9)}{x(x - 7)}$

B) $\frac{(x + 9)(x - 7)}{x}$

C) $\frac{x}{(x + 9)(x - 7)}$

D) $(x + 9)(x - 7)$

Answer: B

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26) $\dfrac{\dfrac{4x^2 - 49}{x^2 - 16}}{\dfrac{2x - 7}{x - 4}}$

A) $\dfrac{x + 4}{2x + 7}$

B) $\dfrac{2x + 7}{x + 4}$

C) $\dfrac{(2x - 7)(4x^2 - 49)}{(x^2 - 4)(x - 4)}$

D) $\dfrac{2x - 7}{x - 4}$

Answer: B

27) $\dfrac{x}{2} - \dfrac{10}{11}$

A) $\dfrac{11x + 20}{20}$

B) $\dfrac{x - 10}{22}$

C) $\dfrac{11x - 20}{22}$

D) $\dfrac{x - 10}{13}$

Answer: C

28) $\dfrac{6x + 5}{2} - \dfrac{6x - 5}{2}$

A) 25
B) 5
C) 0
D) 6x

Answer: B

29) $\dfrac{8x^2}{x - 1} - \dfrac{8x}{x - 1}$

A) 8x
B) 0
C) $\dfrac{8x(x + 1)}{x - 1}$

D) $\dfrac{8x}{x - 1}$

Answer: A

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30) $\frac{6}{7x} - \frac{4}{7x}$

A) $\frac{7}{2x}$

B) $\frac{2}{7x}$

C) 1

D) $\frac{1}{7x}$

Answer: B

31) $\frac{1}{3x} + \frac{11}{12x}$

A) $\frac{15}{24x}$

B) $\frac{5}{4x}$

C) 1

D) $\frac{4}{5x}$

Answer: B

32) $\frac{3x + 5}{x} + \frac{5x - 8}{9x}$

A) $\frac{32x + 37}{9x^2}$

B) $\frac{22x + 37}{9x}$

C) $\frac{32x - 53}{9x}$

D) $\frac{32x + 37}{9x}$

Answer: D

33) $\frac{8}{x^2} - \frac{6}{x}$

A) $\frac{2(3x - 4)}{x}$

B) $\frac{2(4 - 3x)}{x^2}$

C) $\frac{2(4 + 3x)}{x^2}$

D) $\frac{2(4x + 3)}{x^2}$

Answer: B

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34) $\frac{5}{x} + \frac{8}{x - 7}$

A) $\frac{35x - 13}{x(7 - x)}$

B) $\frac{13x - 35}{x(7 - x)}$

C) $\frac{13x - 35}{x(x - 7)}$

D) $\frac{35x - 13}{x(x - 7)}$

Answer: C

35) $\frac{4}{x + 5} - \frac{6}{x - 5}$

A) $\frac{-2}{(x + 5)(x - 5)}$

B) $\frac{-2x + 50}{(x + 5)(x - 5)}$

C) $\frac{-2x - 50}{(x + 5)(x - 5)}$

D) $\frac{-2x + 10}{(x + 5)(x - 5)}$

Answer: C

36) $\frac{17}{x - 5} + \frac{6}{x - 5}$

A) $\frac{11}{x - 5}$

B) $\frac{11}{x}$

C) $\frac{17(x - 5)}{6(x - 5)}$

D) $\frac{23}{x - 5}$

Answer: D

37) $\frac{2x^2}{x - 1} - \frac{2x}{x - 1}$

A) $\frac{2x}{x - 1}$

B) $2x$

C) $\frac{2x(x + 1)}{x - 1}$

D) 0

Answer: B

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38) $\frac{8 - x}{x - 2} - \frac{2x + 4}{2 - x}$

A) $\frac{x + 4}{x - 2}$

B) $-\frac{x + 12}{x - 2}$

C) $-\frac{x + 4}{x - 2}$

D) $\frac{x + 12}{x - 2}$

Answer: D

39) $\frac{x + 4}{x + 2} - \frac{x + 4}{x - 6}$

A) $\frac{-8(x + 4)}{(x + 2)(x - 6)}$

B) $\frac{-4(x + 4)}{(x + 2)(x - 6)}$

C) $\frac{8(x + 4)}{(x + 2)(x - 6)}$

D) 0

Answer: A

40) $\frac{7x}{x - 8} + \frac{5}{8 - x}$

A) $\frac{7x - 5}{8 - x}$

B) $\frac{2x}{x - 8}$

C) $\frac{7x + 5}{x - 8}$

D) $\frac{7x - 5}{x - 8}$

Answer: D

41) $\frac{x^2 - 7x}{x - 3} + \frac{12}{x - 3}$

A) $x + 4$

B) $x - 4$

C) $x - 3$

D) $x + 3$

Answer: B

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Find the LCM of the given polynomials.

42) $x,\ x + 4$

A) x

B) $x^2(x + 4)$

C) $x(x + 4)$

D) $x + 4$

Answer: C

43) $3x - 9,\ x^2 - 3x$

A) $3x^2 - 3$

B) $3x - 3$

C) $3x^2 - 9$

D) $3x(x - 3)$

Answer: D

44) $x^2 + 12x + 36,\ x^2 + 6x$

A) $x(x + 6)^2$

B) $x(x + 1)(x + 6)$

C) $x(x + 6)$

D) $(x + 6)^2$

Answer: A

45) $x^2 + 6x + 8,\ -3x - 12$

A) $-3(x - 2)(x + 4)$

B) $-3(x - 2)(x - 4)$

C) $-3(x + 2)(x - 4)$

D) $-3(x + 2)(x + 4)$

Answer: D

46) $x^2 - 7x + 12,\ x^2 - 4x + 3$

A) $(x - 4)(x - 3)$

B) $(x - 4)(x - 3)(x - 1)$

C) $(x + 4)(x + 3)(x - 1)$

D) $(x - 3)(x - 1)$

Answer: B

47) $x - 7,\ 7 - x$

A) $(x - 7)(7 - x)$

B) $x + 7$

C) -1

D) $(x - 7)$ or $(7 - x)$

Answer: D

48) $12x - 7,\ 12x + 7$

A) $(12x - 7)$ or $(12x + 7)$

B) $(12x + 7)$

C) $(12x - 7)$

D) $(12x - 7)(12x + 7)$

Answer: D

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49) $x^2 - 4x,\ (x - 4)^2$

A) $x(x - 4)^2$

B) $(x + 4)(x - 4)^2$

C) $x(x - 4)$

D) $x(x + 4)^2$

Answer: A

50) $x^2 - 5x - 36,\ x^2 - 16,\ x^2 - 13x + 36$

A) $(x - 9)(x + 4)(x - 4)$

B) $(x + 9)(x - 4)^2$

C) $(x + 9)(x + 4)(x - 4)$

D) $(x - 9)(x + 4)$

Answer: A

Perform the indicated operations and simplify the result. Leave the answer in factored form.

51) $\frac{2}{x} + \frac{8}{x - 6}$

A) $\frac{10x - 12}{x(x - 6)}$

B) $\frac{10x - 12}{x(6 - x)}$

C) $\frac{12x - 10}{x(x - 6)}$

D) $\frac{12x - 10}{x(6 - x)}$

Answer: A

52) $-\frac{1}{2} - \frac{8}{5x}$

A) $\frac{5x - 16}{10x}$

B) $\frac{-13}{10 - 5x}$

C) $\frac{-5x - 16}{10x}$

D) $\frac{-5x + 16}{10x}$

Answer: C

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53) $\frac{1}{(x+5)(x+4)} - \frac{3}{(x+4)(x+7)}$

A) $\frac{2(x+4)}{(x+5)(x+4)(x+7)}$

B) $\frac{2(2x+11)}{(x+5)(x+4)(x+7)}$

C) $\frac{-2(x+4)}{(x+5)(x+4)(x+7)}$

D) $\frac{-2(x+6)}{(x+5)(x+4)(x+7)}$

Answer: C

54) $\frac{x-1}{x^2-7x+12} + \frac{5x+2}{x^2-5x+4}$

A) $\frac{6x^2-15x-5}{(x-4)(x-3)(x-1)}$

B) $6x+1$

C) $\frac{6x+1}{2x^2-12x+16}$

D) $\frac{6x^2-15x-5}{(x+4)(x+3)(x+1)}$

Answer: A

55) $\frac{3}{x^2-3x+2} + \frac{7}{x^2-1}$

A) $\frac{10x-11}{(x-1)(x-2)}$

B) $\frac{42x-11}{(x-1)(x+1)(x-2)}$

C) $\frac{10x-11}{(x-1)(x+1)(x-2)}$

D) $\frac{11x-10}{(x-1)(x+1)(x-2)}$

Answer: C

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56) $\frac{x}{x^2 - 16} - \frac{4}{x^2 + 5x + 4}$

A) $\frac{x^2 - 3}{(x - 4)(x + 4)(x + 1)}$

B) $\frac{x^2 + 3x + 16}{(x - 4)(x + 4)(x + 1)}$

C) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)}$

D) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)(x + 1)}$

Answer: D

57) $\frac{10}{x^2 + 2x} + \frac{2}{x} + \frac{5}{x + 2}$

A) $\frac{7}{x}$

B) $\frac{2}{x}$

C) $\frac{10}{x}$

D) $\frac{5}{x}$

Answer: A

58) $\frac{4x}{x + 1} + \frac{5}{x - 1} - \frac{8}{x^2 - 1}$

A) $\frac{x + 1}{x - 1}$

B) $\frac{4x}{x - 1}$

C) $\frac{4x - 3}{x + 1}$

D) $\frac{4x - 3}{x - 1}$

Answer: D

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59) $\frac{3x}{x^2 - 5x - 36} - \frac{x - 1}{x^2 - 16} + \frac{1}{x^2 - 13x + 36}$

A) $\frac{2x^2 - 21x + 13}{(x - 9)(x + 4)(x - 4)}$

B) $\frac{2x - 1}{(x - 9)(x + 4)}$

C) $\frac{2x - 1}{(x - 9)(x - 4)}$

D) $\frac{2x^2 - x - 5}{(x - 9)(x + 4)(x - 4)}$

Answer: D

60) $\dfrac{\frac{5}{x} + 5}{\frac{5}{x} - 5}$

A) $\frac{5(1 + x)}{1 - x}$

B) $5 - x^2$

C) $\frac{x^2}{5 - x^2}$

D) $\frac{1 + x}{1 - x}$

Answer: D

61) $\dfrac{1 - \frac{4}{x}}{1 + \frac{4}{x}}$

A) $\frac{x + 4}{x - 4}$

B) $x + 4$

C) $x - 4$

D) $\frac{x - 4}{x + 4}$

Answer: D

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62)

$$\frac{\frac{2}{x}+1}{\frac{2}{x}-1}$$

A) $\frac{2+x}{2-x}$

B) $\frac{x^2}{x^2+2}$

C) x^2+2

D) 2

Answer: A

63)

$$\frac{1-\frac{1}{x}}{8+\frac{1}{x}}$$

A) $\frac{8x+1}{x-1}$

B) $\frac{x+1}{8x-1}$

C) $\frac{x-1}{8x}$

D) $\frac{x-1}{8x+1}$

Answer: D

64)

$$\frac{1-\frac{8}{x}}{x-\frac{64}{x}}$$

A) $\frac{1}{x+8}$

B) $\frac{1}{x-8}$

C) $x-8$

D) $x+8$

Answer: A

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65)

$$\frac{\frac{x}{81} - \frac{1}{x}}{1 + \frac{9}{x}}$$

A) $\frac{x - 9}{81}$

B) $\frac{81}{x + 9}$

C) $\frac{x + 9}{81}$

D) $\frac{81}{x - 9}$

Answer: A

66)

$$\frac{4 + \frac{2}{x}}{\frac{x}{3} + \frac{1}{6}}$$

A) $\frac{x}{12}$

B) 12

C) 1

D) $\frac{12}{x}$

Answer: D

67)

$$\frac{\frac{3}{x} + \frac{5}{x^2}}{\frac{9}{x^2} - \frac{25}{x}}$$

A) $\frac{3x + 5}{9 - 25x}$

B) $\frac{1}{3 - 5x}$

C) $\frac{1}{3x - 5}$

D) $\frac{3x^2 + 5}{9 - 25x}$

Answer: A

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68)

$$\frac{\frac{5}{x} + 4}{\frac{25}{x^2} - 16}$$

A) $\frac{x}{5x - 4}$

B) $\frac{x}{5 - 4x}$

C) $\frac{1}{5x - 4}$

D) $\frac{1}{5 - 4x}$

Answer: B

69)

$$\frac{x - \frac{x}{x + 2}}{x + 1}$$

A) $\frac{x^2}{x + 2}$

B) $\frac{x}{x + 2}$

C) $\frac{x}{x + 1}$

D) $\frac{x}{x - 2}$

Answer: B

70)

$$\frac{\frac{7}{3x - 1} - 7}{\frac{7}{3x - 1} + 7}$$

A) $\frac{3x}{2 - 3x}$

B) $\frac{2 - 3x}{3x}$

C) $\frac{2 + 3x}{3x}$

D) $\frac{2 - x}{x}$

Answer: B

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71)

$$\frac{\frac{10}{11 - x} + \frac{11}{x - 11}}{\frac{7}{x} + \frac{4}{x - 11}}$$

A) $\frac{21x}{11x - 77}$

B) $\frac{x}{11x - 77}$

C) $-\frac{21x}{11x - 77}$

D) $-\frac{x}{11x - 77}$

Answer: B

72)

$$\frac{\frac{x}{x - 4} + 1}{\frac{12}{x^2 - 16} + 1}$$

A) $\frac{2x - 8}{x - 2}$

B) $\frac{2x + 8}{x - 2}$

C) $\frac{x + 4}{x + 2}$

D) $\frac{2x + 8}{x + 2}$

Answer: D

73)

$$\frac{\frac{7}{x + 5} + \frac{14}{x + 7}}{\frac{3x + 17}{x^2 + 12x + 35}}$$

A) $3x + 17$

B) 7

C) $\frac{1}{7}$

D) 21

Answer: B

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74)

$$\frac{\frac{x+6}{x-6}+\frac{x-6}{x+6}}{\frac{x+6}{x-6}-\frac{x-6}{x+6}}$$

A) $\frac{(x+6)^3}{24x(x+7)}$

B) 1

C) $\frac{(x+6)^2}{12x}$

D) $\frac{x^2+36}{12x}$

Answer: D

75)

$$\frac{\frac{1}{x+8}+\frac{1}{x-8}}{\frac{1}{x^2-64}}$$

A) 2x

B) 16

C) x^2

D) - 16

Answer: A

76)

$$\frac{\frac{3}{x^2-3x-18}-\frac{1}{x-6}}{\frac{1}{x+3}+1}$$

A) $-\frac{x}{x^2-2x-24}$

B) - 1

C) $-\frac{x}{x^2-3x-18}$

D) $\frac{x}{x^2-4x-24}$

Answer: A

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Solve the problem.

77) The focal length f of a lens with index of refraction n is $\frac{1}{f} = (n - 1)\left[\frac{1}{R_1} + \frac{1}{R_2}\right]$ where R_1 and R_2 are the radii of curvature of the front and back surfaces of the lens. Express f as a rational expression.

A) $f = \frac{(n - 1)(R_1 + R_2)}{R_1 R_2}$

B) $f = \frac{R_1 R_2}{(n - 1)(R_1 + R_2)}$

C) $f = \frac{R_1 R_2}{(n + 1)(R_1 - R_2)}$

D) $f = \frac{n(R_1 - R_2)}{R_1 R_2}$

Answer: B

78) An electrical circuit contains two resistors connected in parallel. If the resistance of each is R_1 and R_2 ohms, respectively, then their combined resistance R is given the formula

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}}$$

If their combined resistance R is 2 ohms and R_2 is 9 ohms, find R_1.

A) $\frac{18}{7}$ ohms

B) $\frac{2}{7}$ ohms

C) $\frac{7}{18}$ ohm

D) 7 ohms

Answer: A

Simplify the expression. Assume that all variables are positive when they appear.

79) $\sqrt[3]{512}$

A) 8
B) ±8
C) 23
D) 64

Answer: A

80) $\sqrt[3]{-729}$

A) - 9
B) 27
C) ±9
D) 81

Answer: A

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81) $\sqrt[4]{625}$

A) 625
B) 5
C) - 5
D) not a real number

Answer: B

82) $\sqrt{9y^{10}}$

A) $3y^{10}$
B) $3y^5$
C) $9y^5$
D) $3y^8$

Answer: B

83) $\sqrt{147x^2}$

A) $3x^2\sqrt{7}$
B) $7x\sqrt{3}$
C) $7\sqrt{3x}$
D) 147x

Answer: B

84) $\sqrt[3]{-64x^{24}y^{36}}$

A) $-4x^{12}y^{18}$
B) $-4x^8y^{12}$
C) $4x^8y^{12}$
D) $16x^8y^{12}$

Answer: B

85) $-\sqrt[3]{-8x^{12}y^{24}}$

A) $2x^4y^{12}$
B) $-2x^{12}y^8$
C) $4x^4y^8$
D) $2x^4y^8$

Answer: D

86) $\sqrt{27x^7y^8}$

A) $3x^3y^4\sqrt{3x}$
B) $3y^4\sqrt{3x^7}$
C) $3x^3y^4\sqrt{3}$
D) $3x^7y^8\sqrt{3x}$

Answer: A

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87) $\sqrt[3]{343x^4y^5}$

A) $2xy\sqrt[3]{xy^2}$

B) $7xy\sqrt[3]{xy^2}$

C) $7xy\sqrt{xy^2}$

D) $7xy\sqrt[3]{xy}$

Answer: B

88) $\sqrt{\frac{125x^2y}{49}}$

A) $x\sqrt{\frac{125y}{7}}$

B) $25x\sqrt{5y}$

C) $\frac{5\sqrt{5x^2y}}{7}$

D) $\frac{5x\sqrt{5y}}{7}$

Answer: D

89) $\sqrt{y^7}$

A) $y^6\sqrt{y}$

B) $y^3\sqrt{y}$

C) $y\sqrt{y^5}$

D) $\sqrt{y^7}$

Answer: B

90) $\sqrt[3]{-27x^{21}}$

A) $-3x^7$

B) $3x^7$

C) $-3x^{18}$

D) $-3x^{21}$

Answer: A

91) $\sqrt[3]{x^{23}}$

A) $x^7\sqrt[3]{x^2}$

B) $\sqrt[3]{x^{23}}$

C) x^9

D) $x\sqrt[3]{x^{20}}$

Answer: A

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92) $\sqrt[3]{\frac{11}{y^{21}}}$

A) $\sqrt[3]{\frac{11}{y^{21}}}$

B) $\frac{\sqrt[3]{11}}{y^{18}}$

C) $\frac{\sqrt[3]{11}}{y^{7}}$

D) $\frac{11}{y^{7}}$

Answer: C

93) $\sqrt[3]{\frac{24}{x^{30}}}$

A) $\frac{2\sqrt[3]{3}}{x^{27}}$

B) $\frac{\sqrt[3]{24}}{x^{10}}$

C) $\frac{2\sqrt[3]{3}}{x^{10}}$

D) $\sqrt[3]{\frac{24}{x^{30}}}$

Answer: C

94) $(\sqrt{12} + 2)(\sqrt{12} - 2)$

A) $12 - 2\sqrt{2}$

B) 8

C) 10

D) 16

Answer: B

95) $(9\sqrt{7})(9\sqrt{70})$

A) $81\sqrt{490}$

B) $3{,}969\sqrt{10}$

C) $567\sqrt{70}$

D) $567\sqrt{10}$

Answer: D

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96) $\sqrt[3]{21} \cdot \sqrt[3]{49}$

A) $\sqrt[3]{1{,}029}$

B) $\sqrt[6]{1{,}029}$

C) $7\sqrt[3]{21}$

D) $7\sqrt[3]{3}$

Answer: D

97) $10\sqrt[3]{7} \cdot 11\sqrt[3]{6}$

A) $21\sqrt[3]{42}$

B) $110\sqrt[3]{13}$

C) $110\sqrt[3]{7} \cdot \sqrt[3]{6}$

D) $110\sqrt[3]{42}$

Answer: D

98) $7\sqrt{2} + 5\sqrt{8}$

A) $12\sqrt{2}$

B) $-17\sqrt{2}$

C) $3\sqrt{2}$

D) $17\sqrt{2}$

Answer: D

99) $7\sqrt{12} - 2\sqrt{192}$

A) $-2\sqrt{3}$

B) $-30\sqrt{3}$

C) $2\sqrt{3}$

D) $30\sqrt{3}$

Answer: A

100) $-10\sqrt{48} + 7\sqrt{27} - 10\sqrt{147}$

A) $-89\sqrt{3}$

B) $-17\sqrt{3}$

C) $17\sqrt{3}$

D) $-10\sqrt{3}$

Answer: A

101) $\sqrt{5x^2} - 2\sqrt{45x^2} - 3\sqrt{45x^2}$

A) $-5x\sqrt{36}$

B) $-14x\sqrt{36}$

C) $-5x\sqrt{5}$

D) $-14x\sqrt{5}$

Answer: D

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102) $20\sqrt[3]{2} - 4\sqrt[3]{128}$

A) $-4\sqrt[3]{2}$

B) $20\sqrt[3]{2} - 4\sqrt[3]{128}$

C) $16\sqrt[3]{2}$

D) $4\sqrt[3]{2}$

Answer: D

103) $\sqrt[3]{8y} - \sqrt[3]{128y}$

A) $2\sqrt[3]{y} - 4\sqrt[3]{2y}$

B) $6\sqrt[3]{y}$

C) $2 - 4\sqrt[3]{2}$

D) $4\sqrt[3]{2y} - 2\sqrt[3]{y}$

Answer: A

104) $(5\sqrt{11} + 4)^2$

A) $291 - 40\sqrt{11}$

B) $291 + 40\sqrt{11}$

C) $259 + 40\sqrt{11}$

D) $279 + 40\sqrt{11}$

Answer: B

105) $4\sqrt[3]{64x} + 4\sqrt[3]{8x}$

A) $24x$

B) $6\sqrt[3]{x}$

C) $24\sqrt[3]{x}$

D) $4\sqrt[3]{72x}$

Answer: C

106) $4\sqrt[3]{81x} - 3\sqrt[3]{192x}$

A) $24\sqrt[3]{x}$

B) $12\sqrt[3]{x} - 3\sqrt[3]{192x}$

C) 0

D) cannot simplify

Answer: C

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107) $\sqrt[3]{27} + 12 - \sqrt[3]{18}$

A) $15\sqrt[3]{18}$

B) $15 - 2\sqrt[3]{9}$

C) $\sqrt[3]{27} + 12 - \sqrt[3]{18}$

D) $15 - \sqrt[3]{18}$

Answer: D

108) $\sqrt{2x^2} - \sqrt[3]{375} + \sqrt{242x^2}$

A) $12\sqrt{2x^2} - \sqrt[3]{375}$

B) $12x\sqrt{2} - 5\sqrt{15}$

C) $11x\sqrt{2} - 5\sqrt[3]{3}$

D) $12x\sqrt{2} - 5\sqrt[3]{3}$

Answer: D

109) $(\sqrt{12} + \sqrt{z})(\sqrt{12} - \sqrt{z})$

A) $12z$

B) $12 - z$

C) $12 - 2\sqrt{z}$

D) $12 - 2\sqrt{12z}$

Answer: B

110) $\dfrac{\sqrt{56x^5y^6}}{\sqrt{2y^4}}$

A) $2x^4y^2\sqrt{7xy}$

B) $4x^2y\sqrt{7x}$

C) $28xy\sqrt{x}$

D) $2x^2y\sqrt{7x}$

Answer: D

Solve.

111) When an object is dropped to the ground from a height of h meters, the time it takes for the object to reach the ground is given by the equation $t = \sqrt{\dfrac{h}{4.9}}$, where t is measured in seconds. If an object falls 176.4 meters before it hits the ground, find the time it took for the object to fall.

A) 9 seconds

B) 36 seconds

C) 6 seconds

D) 7 seconds

Answer: C

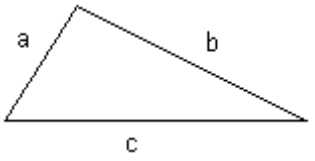
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112) If the three lengths of the sides of a triangle are known, Heron's formula can be used to find its area. If a, b, and c are the three lengths of the sides, Heron's formula for area is:

$A = \sqrt{s(s - a)(s - b)(s - c)}$

where s is half the perimeter of the triangle, or $s = \frac{1}{2}(a + b + c)$.

Use this formula to find the area of the triangle if a = 7 cm, b = 9 cm and c = 14 cm.



A) $12\sqrt{5}$ sq. cm
B) $12\sqrt{10}$ sq. cm
C) $4\sqrt{3}$ sq. cm
D) $12\sqrt{1610}$ sq. cm

Answer: A

Solve the problem.

113) A formula used to determine the velocity v in feet per second of an object (neglecting air resistance) after it has fallen a certain height is $v = \sqrt{2gh}$, where g is the acceleration due to gravity and h is the height the object has fallen. If the acceleration g due to gravity on Earth is approximately 32 feet per second, find the velocity of a bowling ball after it has fallen 20 feet. (Round to the nearest tenth.)

A) 35.8 ft per sec
B) 1,280 ft per sec
C) 6.3 ft per sec
D) 25.3 ft per sec

Answer: A

114) Police use the formula $s = \sqrt{30fd}$ to estimate the speed s of a car in miles per hour, where d is the distance in feet that the car skidded and f is the coefficient of friction. If the coefficient of friction on a certain gravel road is 0.28 and a car skidded 330 feet, find the speed of the car, to the nearest mile per hour.

A) 2,772 mph
B) 53 mph
C) 99 mph
D) 288 mph

Answer: B

115) The formula $v = \sqrt{2.5r}$ can be used to estimate the maximum safe velocity v, in miles per hour, at which a car can travel along a curved road with a radius of curvature r, in feet. To the nearest whole number, find the maximum safe speed for a curve in a road with a radius of curvature of 200 feet.

A) 22 mph
B) 14 mph
C) 9 mph
D) 35 mph

Answer: A

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116) The maximum distance d in kilometers that you can see from a height h in meters is given by the formula $d = 3.5\sqrt{h}$. How far can you see from the top of a 383- meter building? (Round to the nearest tenth of a kilometer.)

A) 68.5 km
B) 19.6 km
C) 716.5 km
D) 36.6 km

Answer: A

Simplify the expression. Assume that all variables are positive when they appear.

117) $\frac{1}{\sqrt{11}}$

A) $\frac{\sqrt{11}}{11}$
B) 11
C) $11\sqrt{11}$
D) $\sqrt{11}$

Answer: A

118) $\frac{6}{\sqrt{7}}$

A) $6\sqrt{7}$
B) $\frac{6\sqrt{7}}{7}$
C) $\frac{36\sqrt{7}}{7}$
D) 55

Answer: B

119) $\frac{3}{\sqrt{10}}$

A) $\frac{3\sqrt{10}}{10}$
B) 103
C) $\frac{9\sqrt{10}}{10}$
D) $3\sqrt{10}$

Answer: A

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120) $\frac{\sqrt{16}}{\sqrt{11}}$

A) $\frac{16\sqrt{11}}{11}$

B) $4\sqrt{11}$

C) $\frac{4\sqrt{11}}{11}$

D) 125

Answer: C

121) $\frac{-9}{\sqrt{28}}$

A) -28

B) $-\frac{9\sqrt{7}}{7}$

C) $-\frac{9\sqrt{7}}{14}$

D) $-9\sqrt{7}$

Answer: C

122) $\frac{3}{6-\sqrt{7}}$

A) $\frac{3}{6}-\frac{3}{\sqrt{7}}$

B) $\frac{18-3\sqrt{7}}{29}$

C) $\frac{18+3\sqrt{7}}{29}$

D) $\frac{18+3\sqrt{7}}{1}$

Answer: C

123) $\frac{\sqrt{2}}{\sqrt{5}+9}$

A) $\frac{\sqrt{10}+9\sqrt{2}}{-76}$

B) $\frac{\sqrt{10}-9\sqrt{2}}{14}$

C) $\frac{3\sqrt{10}+5\sqrt{2}}{45}$

D) $\frac{\sqrt{10}-9\sqrt{2}}{-76}$

Answer: D

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124) $\frac{\sqrt{2}}{2\sqrt{7} - \sqrt{2}}$

A) $\frac{\sqrt{14} + 1}{13}$

B) $\frac{\sqrt{7} + 1}{13}$

C) $\frac{\sqrt{14} - 1}{13}$

D) $\frac{\sqrt{14} + 1}{15}$

Answer: A

125) $\frac{1 - \sqrt{10}}{1 + \sqrt{10}}$

A) $\frac{11 + 2\sqrt{10}}{-9}$

B) 1

C) $\frac{11 - 2\sqrt{10}}{-9}$

D) $\frac{-9 - 2\sqrt{10}}{11}$

Answer: C

126) $\frac{5\sqrt{3} + \sqrt{6}}{\sqrt{6} + \sqrt{3}}$

A) $4\sqrt{2} - 3$

B) $5\sqrt{2} - 7$

C) $6\sqrt{2} + 7$

D) $5\sqrt{2} - 3$

Answer: A

127) $\frac{5}{\sqrt[3]{3}}$

A) $5\sqrt[3]{3}$

B) $\frac{5\sqrt[3]{9}}{3}$

C) $\frac{5\sqrt[3]{3}}{3}$

D) $5\sqrt[3]{9}$

Answer: B

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128) $\frac{-5}{\sqrt[3]{9}}$

A) $-5\sqrt[3]{3}$

B) $-5\sqrt[3]{9}$

C) $\frac{-5\sqrt[3]{3}}{3}$

D) $\frac{-5\sqrt[3]{9}}{3}$

Answer: C

129) $\frac{\sqrt{x}-\sqrt{y}}{\sqrt{7x}+\sqrt{3y}}$

A) $\frac{x\sqrt{7}-\sqrt{3xy}-\sqrt{7xy}+y\sqrt{3}}{7x-3y}$

B) $\frac{x\sqrt{7}-\sqrt{3xy}-\sqrt{7xy}+y\sqrt{3}}{7x+3y}$

C) $\frac{\sqrt{7x}-\sqrt{10xy}+\sqrt{3y}}{7x+3y}$

D) $\frac{\sqrt{7x}-\sqrt{10xy}+\sqrt{3y}}{7x-3y}$

Answer: A

130) $\frac{4}{\sqrt{x+h}-\sqrt{x}}$

A) $\frac{4(\sqrt{x+h}-\sqrt{x})}{h}$

B) $\frac{4\sqrt{h}}{h}$

C) $\frac{4\sqrt{x+h}+\sqrt{x}}{h}$

D) $\frac{4(\sqrt{x+h}+\sqrt{x})}{h}$

Answer: D

Simplify the expression.

131) $-32^{1/5}$

A) -2

B) 32

C) 16

D) -8

Answer: A

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132) $\left(\frac{1}{16}\right)^{1/2}$

A) 4

B) $\frac{-1}{4}$

C) $\frac{1}{4}$

D) -4

Answer: C

133) $8^{4/3}$

A) 16

B) 32

C) 64

D) 128

Answer: A

134) $16^{5/4}$

A) 512

B) 256

C) 32

D) 128

Answer: C

135) $243^{4/5}$

A) 2,187

B) 19,683

C) 81

D) 6,561

Answer: C

136) $\left(\frac{8}{64}\right)^{2/3}$

A) $-\frac{1}{4}$

B) $\frac{1}{4}$

C) $\frac{1}{2}$

D) $\frac{1}{6}$

Answer: B

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137) $(-64)^{4/3}$

A) - 256

B) 4,096

C) 256

D) not a real number

Answer: C

138) $36^{-3/2}$

A) $\frac{1}{216}$

B) - 216

C) $-\frac{1}{216}$

D) 216

Answer: A

139) $64^{-4/3}$

A) $-\frac{1}{256}$

B) $\frac{1}{256}$

C) 256

D) not a real number

Answer: B

140) $16^{-5/4}$

A) 32

B) $\frac{1}{32}$

C) $-\frac{1}{32}$

D) not a real number

Answer: B

141) $32^{-4/5}$

A) 16

B) $\frac{1}{16}$

C) not a real number

D) $-\frac{1}{16}$

Answer: B

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142) $-64^{-4/3}$

A) 256

B) $\frac{1}{256}$

C) $-\frac{1}{256}$

D) not a real number

Answer: C

143) $-243^{-4/5}$

A) 81

B) $-\frac{1}{81}$

C) $\frac{1}{81}$

D) not a real number

Answer: B

144) $1{,}444^{1/2}$

A) 152

B) 76

C) 19

D) 38

Answer: D

145) $27^{1/3}$

A) 243

B) 81

C) 3

D) 9

Answer: C

146) $4{,}096^{1/4}$

A) 8

B) 256

C) 32

D) 32,768

Answer: A

147) $16^{5/4}$

A) 1,024

B) $\sqrt[5]{8}$

C) 32

D) 35

Answer: C

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148) $216^{4/3}$

A) 1,296
B) 7,776
C) 46,656
D) 279,936

Answer: A

149) $256^{5/4}$

A) 262,144
B) 16,384
C) 65,536
D) 1,024

Answer: D

150) $25^{-1/2}$

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

Answer: D

151) $729^{-1/3}$

A) $\frac{1}{27}$
B) - 9
C) 9
D) $\frac{1}{9}$

Answer: D

152) $125^{-4/3}$

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

Answer: C

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153) $16^{-7/4}$

A) $\frac{1}{128}$

B) - 16,384

C) - 128

D) $-\frac{1}{128}$

Answer: A

154) $\left(\frac{25}{9}\right)^{3/2}$

A) $-\frac{27}{125}$

B) $\frac{125}{27}$

C) $\frac{27}{125}$

D) $-\frac{125}{27}$

Answer: B

155) $\left(\frac{64}{25}\right)^{-1/2}$

A) $\frac{32}{25}$

B) $\frac{8}{5}$

C) $\frac{5}{8}$

D) not a real number

Answer: C

156) $\left(-\frac{27}{64}\right)^{-4/3}$

A) $\frac{256}{81}$

B) $-\frac{81}{256}$

C) $\frac{81}{256}$

D) not a real number

Answer: A

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Simplify the expression. Express the answer so that only positive exponents occur. Assume that all variables are positive.

157) $x^{3/8} \cdot x^{5/8}$

A) $x^{15/8}$

B) x

C) $x^{15/64}$

D) $\frac{1}{x}$

Answer: B

158) $x^{-2/5} \cdot x^{3/5}$

A) $x^{6/5}$

B) $x^{1/5}$

C) $x^{-1/5}$

D) $x^{5/6}$

Answer: B

159) $(x^{14}y^{7})^{1/7}$

A) x^{2}

B) $x^{2}|y|$

C) $x^{14}y$

D) $x^{2}y$

Answer: D

160) $(27x^{6}y^{6})^{1/3}$

A) $3x^{2}y$

B) $x^{2}y^{2}$

C) $3x^{6}y^{2}$

D) $3x^{2}y^{2}$

Answer: D

161) $(3x^{2/3})(6x^{3/2})$

A) $18x^{2/3}$

B) $18x^{13/5}$

C) $18x^{13/6}$

D) $18x^{5/6}$

Answer: C

162) $(x^{5}y^{2})^{3/4}$

A) $x^{23/4}y^{11/4}$

B) $x^{20/3}y^{8/3}$

C) $x^{3/2}y^{15/4}$

D) $x^{15/4}y^{3/2}$

Answer: D

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163) $(9x^{10}y^{-16})^{1/2}$

A) $3x^5y^8$

B) $\frac{9x^5}{y^8}$

C) $\frac{3x^5}{y^8}$

D) $\frac{3}{x^5y^8}$

Answer: C

164) $(9x^{1/5} \cdot y^{1/5})^2$

A) $81x^{1/25}y^{1/25}$

B) $81x^2y^2$

C) $81x^{1/10}y^{1/10}$

D) $81x^{2/5}y^{2/5}$

Answer: D

165) $\frac{x^{5/3} \cdot x^{3/4}}{x^{-4/7}}$

A) $x^{251/84}$

B) $x^{155/84}$

C) $\frac{1}{x^{155/84}}$

D) $\frac{1}{x^{251/84}}$

Answer: A

166) $\frac{(4x^{3/4})^3}{x^{-6/5}}$

A) $64x^{69/20}$

B) $64x^{21/20}$

C) $4x^{21/20}$

D) $4x^{69/20}$

Answer: A

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An expression that occurs in calculus is given. Write the expression as a single quotient in which only positive exponents and/or radicals appear.

167) $\dfrac{(49 - x^2)^{1/2} + 3x^2(49 - x^2)^{-1/2}}{49 - x^2}$

A) $\dfrac{3x^2}{\sqrt{49 - x^2}}$

B) $\dfrac{49 + 2x^2}{(49 - x^2)^{3/2}}$

C) $\dfrac{49 - 4x^2}{(49 - x^2)^{3/2}}$

D) $\dfrac{3x^2}{(49 - x^2)^{3/2}}$

Answer: B

168) $10x^{3/2}(x^3 + x^2) - 12x^{5/2} - 12x^{3/2}$

A) $x^{3/2}(x - 1)[10(x^2 - 1) - 2] + 10x^3$

B) $10x^{3/2}(x^3 - 1) + 10x^3 - 2x^{3/2}(x - 1)$

C) $2x^{3/2}(x + 1)(5x^2 - 6)$

D) $10x^{3/2}(x + 1)(5x^2 - 6)$

Answer: C

169) $(x^2 - 1)^{1/2} \cdot \dfrac{3}{2}(2x + 5)^{1/2} \cdot 2 + (2x + 5)^{3/2} \cdot \dfrac{1}{2}(x^2 - 1)^{-1/2} \cdot 2x$

A) $(x^2 - 1)^{1/2}(2x + 5)^{-1/2}(5x^2 + 5x - 3)$

B) $(x^2 - 1)^{1/2}(2x + 5)^{1/2}(5x^2 + 5x - 3)$

C) $\dfrac{(2x + 5)^{1/2}(5x^2 + 5x - 3)}{(x^2 - 1)^{1/2}}$

D) $\dfrac{(2x + 5)^{1/2}(5x^2 + 5x - 3)}{(x^2 - 1)^{-1/2}}$

Answer: C

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170) $\dfrac{(x^2+2)^{1/2}\cdot\frac{3}{2}(2x+1)^{1/2}\cdot 2 - (2x+1)^{3/2}\cdot\frac{1}{2}(x^2+2)^{-1/2}\cdot 2x}{x^2+2}$

A) $(x^2+2)^{3/2}(2x+1)^{1/2}(x^2 - x+6)$

B) $\dfrac{(2x+1)^{1/2}(x^2 - x+6)}{(x^2+2)^{-3/2}}$

C) $\dfrac{(2x+1)^{1/2}(x^2 - x+6)}{(x^2+2)^{3/2}}$

D) $(x^2+2)^{3/2}(2x+1)^{-1/2}(x^2 - x+6)$

Answer: C

Factor the expression. Express your answer so that only positive exponents occur.

171) $x^{7/8}+3x^{6/8}$

A) $x^{1/8}(x^{1/8}+3)$

B) $x^{3/4}(x^{-1/8}+3)$

C) $x^{1/8}(x^{7/8}+3)$

D) $x^{3/4}(x^{1/8}+3)$

Answer: D

172) $10x^{1/7} - 13x^{-4/7}$

A) $x^{1/3}(10 - 13x^{5/13})$

B) $x^{1/7}(10x^{5/7} - 13x^{5/13})$

C) $x^{-4/7}(10x^{5/7} - 13)$

D) $x^{-4/7}(10x^{5/7} - 13x)$

Answer: C

173) $x^{8/5}+x^{2/5}$

A) $x^{2/5}(x^{6/5}+1)$

B) $x^{2/5}(x^{6/5}+x)$

C) $x^{2/5}(x^{6/5} - 1)$

D) $x^{2/5}(x^{6/5})$

Answer: A

174) $x^{5/4} - x^{3/4}$

A) $x^{3/4}(x^{1/2}+1)$

B) $x^{3/4}(x^{1/2})$

C) $x^{3/4}(x^{1/2} - 1)$

D) $x^{3/4}(x^{1/2} - x)$

Answer: C

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175) $(x+8)^{-3/5} + (x+8)^{-1/5} + (x+8)^{1/5}$

A) $(x+8)^{-3/5}[1+(x+8)^{1/5}+(x+8)^{3/5}]$

B) $(x+8)^{-3/5}[1+(x+8)^{2/5}+(x+8)^{4/5}]$

C) $(x+8)^{-3/5}[1+(x+8)^{-2/5}+(x+8)^{-4/5}]$

D) $(x+8)^{-3/5}[1+(x+8)^{4/5}+(x+8)^{6/5}]$

Answer: B

176) $(3m+9)^{-2/5} + (3m+9)^{1/5} + (3m+9)^{7/5}$

A) $(3m+9)^{-2/5}[1+(3m+9)^{-3/5}+(3m+9)^{-9/5}]$

B) $(3m+9)^{-2/5}[1+(3m+9)^{3/5}-(3m+9)^{9/5}]$

C) $(3m+9)^{-2/5}[1+(3m+9)^{3/5}+(3m+9)^{9/5}]$

D) $(3m+9)^{-2/5}[1+(3m+9)^{4/5}+(3m+9)^{7/5}]$

Answer: C

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

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

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

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151) D
152) C
153) A
154) B
155) C
156) A
157) B
158) B
159) D
160) D
161) C
162) D
163) C
164) D
165) A
166) A
167) B
168) C
169) C
170) C
171) D
172) C
173) A
174) C
175) B
176) C

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