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

Simplify.

1) \[
\frac{193 + 7}{3^2 - 4}
\]
A) 40  B) 100  C) 60  D) 38
Answer: A
Objective: (1.7) Use Order of Operations

Evaluate the expression for the given replacement values.

2) \[4x + 5y\] for \(x = 8\) and \(y = 6\)
A) 62  B) 37  C) 34  D) 9
Answer: A
Objective: (1.8) Evaluate Algebraic Expressions Given Replacement Values

3) \[8x^2 + 5x\] for \(x = 4\)
A) 148  B) 108  C) 84  D) 52
Answer: A
Objective: (1.8) Evaluate Algebraic Expressions Given Replacement Values

4) \[
\frac{20x - 25}{y}\]
for \(x = 7, y = 5\)
A) 23  B) 3  C) 135  D) 8
Answer: A
Objective: (1.8) Evaluate Algebraic Expressions Given Replacement Values

Solve the equation.

5) \(f + 1 = -2\)
A) -3  B) 3  C) -1  D) 1
Answer: A
Objective: (2.6) Use the Addition Property of Equality to Solve Equations

6) \(-2x = -12\)
A) 6  B) 10  C) -10  D) -6
Answer: A
Objective: (2.6) Use the Multiplication Property of Equality to Solve Equations
7) 5x + 4 = 49
   A) 9       B) 40       C) 44       D) 5
   Answer: A
   Objective: (3.2) Use Both Properties to Solve Equations

8) 9n - 4 = 59
   A) 7       B) 54       C) 58       D) 10
   Answer: A
   Objective: (3.2) Use Both Properties to Solve Equations

9) 2(5x - 2) = 8x
   A) 2       B) -2       C) -1       D) 1
   Answer: A
   Objective: (3.2) Use Both Properties to Solve Equations

10) 5(y - 4) = 7y - 20
    A) 0       B) -20      C) 20       D) -40
    Answer: A
    Objective: (3.2) Use Both Properties to Solve Equations

11) -3(x + 2) - 18 = -8 - 4
    A) -4       B) 4        C) 2        D) -2
    Answer: A
    Objective: (3.2) Use Both Properties to Solve Equations

12) 5x - 6 = 2x - 30
    A) -8       B) 8        C) -10      D) 10
    Answer: A
    Objective: (3.3) Solve Linear Equations Using the Addition and Multiplication Properties

Add or subtract as indicated. Write the answer in simplest form.

13) \( \frac{4}{15} - \frac{1}{10} \)
    A) \( \frac{1}{6} \)       B) \( \frac{1}{10} \)       C) \( \frac{1}{5} \)       D) \( \frac{25}{150} \)
    Answer: A
    Objective: (4.5) Add or Subtract Unlike Fractions

Solve.

14) \( \frac{x}{5} = \frac{x}{6} + \frac{2}{5} \)
    A) 12       B) -\( \frac{2}{5} \)       C) 0        D) 1\( \frac{1}{12} \)
    Answer: A
    Objective: (4.8) Solve Equations Containing Fractions
Solve the equation.
15) \[1.1x + 4.3 = 0.7x + 1.14\]
   A) \(-7.9\)  B) \(-7.8\)  C) 0.127  D) \(-7.11\)
   Answer: A
   Objective: (5.6) Solve Equations Containing Decimals

Find the mean. If necessary, round to one decimal place.
16) 17, 1, 16, 16, 7, 19, 3, 17
   A) 12  B) 11  C) 34  D) 13.7
   Answer: A
   Objective: (5.7) Find the Mean of a List of Numbers

Find the median. If necessary, round to one decimal place.
17) 4, 6, 25, 23, 43, 47
   A) 24  B) 23  C) 21.5  D) 25
   Answer: A
   Objective: (5.7) Find the Median of a List of Numbers

Solve the proportion.
18) \[\frac{4}{13} = \frac{x}{39}\]
   A) 12  B) \(\frac{1}{3}\)  C) \(12\frac{3}{4}\)  D) 16
   Answer: A
   Objective: (6.1) Solve Proportions

19) \[\frac{x + 8}{x} = \frac{4}{3}\]
   A) 24  B) \(-32\)  C) \(\frac{24}{7}\)  D) 8
   Answer: A
   Objective: (6.1) Solve Proportions

Translate to an equation and solve.
20) 19 is 4% of what number?
   A) 475  B) 4750  C) 47.5  D) 76
   Answer: A
   Objective: (6.3) Solve Percent Problems

Find the unknown length in the right triangle. If necessary, approximate the length to the nearest thousandth.
21)
   \[\begin{array}{c}
   \text{25 cm} \\
   \text{24 cm} \\
   \text{?}
   \end{array}\]
   A) 7 cm  B) 1 cm  C) 9.322 cm  D) 3.678 cm
   Answer: A
   Objective: (7.3) Use the Pythagorean Theorem
Find the probability of the event.

22) If a single die is tossed once, find the probability of the following event.

A) $\frac{1}{6}$  
B) $\frac{1}{3}$  
C) 2  
D) 0

Answer: A

Objective: (7.5) Find the Probability of an Event

Find the probability of the event if a single choice is made from a bag.

23) A bag contains 7 red marbles, 7 blue marbles, 6 yellow marbles, and 6 green marbles. What is the probability of choosing a red marble when one marble is drawn?

A) $\frac{7}{26}$  
B) $\frac{7}{19}$  
C) $\frac{1}{4}$  
D) $\frac{1}{26}$

Answer: A

Objective: (7.5) Find the Probability of an Event

24) A bag contains 2 red marbles, 7 blue marbles, and 3 green marbles. What is the probability of choosing a blue marble when one marble is drawn?

A) $\frac{7}{12}$  
B) $\frac{1}{6}$  
C) $\frac{1}{4}$  
D) $\frac{7}{9}$

Answer: A

Objective: (7.5) Find the Probability of an Event

25) A bag contains 8 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

A) $\frac{9}{11}$  
B) $\frac{11}{9}$  
C) $\frac{2}{11}$  
D) 9

Answer: A

Objective: (7.5) Find the Probability of an Event

26) A bag contains 7 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

A) $\frac{4}{5}$  
B) $\frac{5}{4}$  
C) $\frac{1}{5}$  
D) 8

Answer: A

Objective: (7.5) Find the Probability of an Event

27) A bag contains 7 red marbles, 8 blue marbles, 6 yellow marbles, and 4 green marbles. What is the probability of choosing a yellow or green marble when one marble is drawn?

A) $\frac{2}{5}$  
B) $\frac{1}{2}$  
C) $\frac{6}{25}$  
D) $\frac{4}{25}$

Answer: A

Objective: (7.5) Find the Probability of an Event
28) A bag contains 17 balls numbered 1 through 17. What is the probability of selecting a ball that has an even number when one ball is drawn from the bag?

A) \( \frac{8}{17} \)  
B) \( \frac{17}{8} \)  
C) \( \frac{2}{17} \)  
D) 8

Answer: A

Objective: (7.5) Find the Probability of an Event

Solve.

29) A new drug is being tested that is supposed to lower cholesterol. This drug was given to 200 people and the results are below.

<table>
<thead>
<tr>
<th>Lower Cholesterol</th>
<th>Higher Cholesterol</th>
<th>not Changed</th>
</tr>
</thead>
<tbody>
<tr>
<td>134</td>
<td>8</td>
<td>58</td>
</tr>
</tbody>
</table>

If a person is testing this drug, what is the probability that their cholesterol will be lower?

A) \( \frac{67}{100} \)  
B) \( \frac{71}{100} \)  
C) \( \frac{33}{100} \)  
D) \( \frac{24}{25} \)

Answer: A

Objective: (7.5) Find the Probability of an Event

30) The length of a rectangle is 148 in. and the width is 36 in. Find its perimeter.

A) 368 in.  
B) 184 in.  
C) 332 in.  
D) 5328 in.

Answer: A

Objective: (8.2) Use Formulas to Find Perimeters

31) The sides of a triangle are 756 ft, 264 ft, and 883 ft. Find its perimeter.

A) 1903 ft  
B) 3806 ft  
C) 1639 ft  
D) 2040 ft

Answer: A

Objective: (8.2) Use Formulas to Find Perimeters

Find the exact or approximate circumference of the circle, as indicated.

32) Find the exact circumference.

A) \( 30\pi \) mi  
B) \( 60\pi \) mi  
C) \( 900\pi \) mi  
D) \( 15\pi \) mi

Answer: A

Objective: (8.2) Use Formulas to Find Circumferences
Find the area of the geometric figure.

33) 

![Circle with radius 9 ft]

Use 3.14 for \( \pi \).

A) 63.585 sq ft  
B) 254.34 sq ft  
C) 127.17 sq ft  
D) 56.52 sq ft

Answer: A  
Objective: (8.3) Find the Area of Plane Regions

Solve the equation.

34) \( 6x - (3x - 1) = 2 \)

A) \( \frac{1}{3} \)  
B) \( \frac{1}{9} \)  
C) \( \frac{1}{3} \)  
D) \( \frac{1}{9} \)

Answer: A  
Objective: (9.3) Apply the General Strategy for Solving a Linear Equation

35) \( (y - 9) - (y + 4) = 6y \)

A) \( -\frac{13}{6} \)  
B) \( -\frac{1}{3} \)  
C) \( -\frac{13}{9} \)  
D) \( -\frac{13}{7} \)

Answer: A  
Objective: (9.3) Apply the General Strategy for Solving a Linear Equation

36) \( 3(2z - 3) = 5(z + 4) \)

A) 29  
B) -11  
C) 11  
D) 14

Answer: A  
Objective: (9.3) Apply the General Strategy for Solving a Linear Equation

37) \( \frac{5}{6}x + \frac{4}{3} = \frac{2}{3}x \)

A) -8  
B) 8  
C) -12  
D) 12

Answer: A  
Objective: (9.3) Solve Equations Containing Fractions or Decimals

38) \( 9x + 5 - 9x - 5 = 6x - 6x - 3 \)

A) 0  
B) -288  
C) all real numbers  
D) no solution

Answer: D  
Objective: (9.3) Recognize Identities and Equations with No Solution
39) \(2(x + 5) = (2x + 10)\)
   A) 20  
   B) 0  
   C) all real numbers  
   D) no solution
   Answer: C  
   Objective: (9.3) Recognize Identities and Equations with No Solution

Solve.

40) You have taken up gardening for relaxation and have decided to fence in your new rectangular shaped masterpiece. The length of the garden is 12 meters and 46 meters of fencing is required to completely enclose it. What is the width of the garden?
   A) 11 m  
   B) 552 m  
   C) 3.83 m  
   D) 22 m
   Answer: A  
   Objective: (9.5) Use Formulas to Solve Problems

41) Ted drove to his grandparents’ house for a holiday weekend. The total distance (one-way) was 312 miles and it took him 12 hours. How fast was Ted driving? (Round answer to the nearest whole number)
   A) 26 mph  
   B) 374 mph  
   C) 38 mph  
   D) 37 mph  
   Answer: A  
   Objective: (9.5) Use Formulas to Solve Problems

42) Use the formula \(C = \frac{5}{9}(F - 32)\) to write 212° F as degrees Celsius.
   A) 100° C  
   B) 413.6° C  
   C) 135.6° C  
   D) 85.8° C
   Answer: A  
   Objective: (9.5) Use Formulas to Solve Problems

Substitute the given values into the formula and solve for the unknown variable.

43) \(d = rt\); \(t = 4, d = 16\)
   A) 4  
   B) 20  
   C) 0.3  
   D) 12
   Answer: A  
   Objective: (9.5) Solve a Formula or Equation for One of Its Variables

44) \(P = 2L + 2W; \ P = 28, W = 6\)
   A) 8  
   B) 14  
   C) 11  
   D) 22
   Answer: A  
   Objective: (9.5) Solve a Formula or Equation for One of Its Variables

45) \(I = prt; \ I = 25.2, p = 140, r = 0.06\)
   A) 3  
   B) 211.68  
   C) 0.3  
   D) 2.1168
   Answer: A  
   Objective: (9.5) Solve a Formula or Equation for One of Its Variables

Solve the equation for the indicated variable.

46) \(d = rt\) for \(r\)
   A) \(r = \frac{d}{t}\)  
   B) \(r = dt\)  
   C) \(r = \frac{t}{d}\)  
   D) \(r = d - t\)
   Answer: A  
   Objective: (9.5) Solve a Formula or Equation for One of Its Variables
47) \( P = 2L + 2W \) for \( L \)

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

Answer: A

Objective: (9.5) Solve a Formula or Equation for One of Its Variables

48) \( A = P + PRT \) for \( R \)

A) \( R = \frac{A - P}{PT} \)  
B) \( R = \frac{P - A}{PT} \)  
C) \( R = \frac{A}{T} \)  
D) \( R = \frac{PT}{A - P} \)

Answer: A

Objective: (9.5) Solve a Formula or Equation for One of Its Variables

49) \( A = P + PRT \) for \( T \)

A) \( T = \frac{A - P}{PR} \)  
B) \( T = \frac{P - A}{PR} \)  
C) \( T = \frac{A}{R} \)  
D) \( T = \frac{PR}{A - P} \)

Answer: A

Objective: (9.5) Solve a Formula or Equation for One of Its Variables

Solve the inequality.

50) \( x - 3 < -4 \)

A) \((-\infty, -1)\)

B) \((-1, \infty)\)

C) \((-\infty, -1]\)

D) \([-1, \infty)\)

Answer: A

Objective: (9.6) Use the Addition Property of Inequality to Solve Inequalities
51) \(-7x - 1 > -8x + 5\)

**Diagram:**

A) \((6, \infty)\)

B) \((-\infty, 4]\)

C) \([4, \infty)\)

D) \((-\infty, 6)\)

**Answer:** A

**Objective:** (9.6) Use the Addition Property of Inequality to Solve Inequalities

52) \(6x \leq 66\)

**Diagram:**

A) \((-\infty, 11]\)

B) \((-\infty, 11)\)

C) \((11, \infty)\)

D) \([11, \infty)\)

**Answer:** A

**Objective:** (9.6) Use the Multiplication Property of Inequality to Solve Inequalities
Solve the inequality. Graph the solution set and write it in interval notation.

53) \(21x + 9 > 3(6x + 4)\)

\(\begin{array}{c}
A) (1, \infty) \\
B) (-\infty, 1) \\
C) (-\infty, 1] \\
D) [1, \infty)
\end{array}\)

Answer: A
Objective: (9.6) Use Both Properties to Solve Inequalities

54) \(-16x - 32 \leq -4(3x + 3)\)

\(\begin{array}{c}
A) [-5, \infty) \\
B) (-\infty, -5) \\
C) (-\infty, -5] \\
D) (-5, \infty)
\end{array}\)

Answer: A
Objective: (9.6) Use Both Properties to Solve Inequalities

Determine whether the ordered pair is a solution of the given linear equation.

55) \(-2y + 3x = -15; (5, 0)\)

A) no 
B) yes

Answer: A
Objective: (10.1) Determine whether an ordered pair is a solution of an equation in two variables.

Find three ordered pair solutions by completing the table. Then use the ordered pairs to graph the equation.
56) $y = 2x + 4$

Answer: A
Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.

57) \( y = -2x - 4 \)

A) 

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-4</td>
</tr>
<tr>
<td>1</td>
<td>-6</td>
</tr>
<tr>
<td>-1</td>
<td>-2</td>
</tr>
</tbody>
</table>

B) 

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>-1</td>
<td>-4</td>
</tr>
</tbody>
</table>
Answer: A

Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.

Graph the linear equation.

58) \(5y - 25x = 10\)
Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.

59) \( y = \frac{1}{8}x + 4 \)
Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.

Match the graph with its equation.

60) \( y = 5x + 3 \)

Answer: A

Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.
61) \( y = 2x - 6 \) 

A) [Graph A] 

B) [Graph B] 

C) [Graph C] 

D) [Graph D] 

Answer: A

Objective: (10.2) Graph a linear equation by finding and plotting ordered pair solutions.

Find the slope of the line that passes through the given points.

62) (8, 5) and (6, 9) 

A) \(-2\) 

B) \(-\frac{1}{2}\) 

C) 1 

D) 2 

Answer: A

Objective: (10.4) Find the slope of a line given two points of the line.

Find an equation of the line described. Write the equation in slope-intercept form if possible.

63) Slope 2, through (5, 2) 

A) \( y = 2x - 8 \) 

B) \( y = 2x + 8 \) 

C) \( x = 2y - 8 \) 

D) \( x = 2y + 8 \) 

Answer: A

Objective: (10.5) Use the point-slope form to find an equation of a line given its slope and a point of the line.

Evaluate the function.

64) Find \( f(4) \) when \( f(x) = x^2 + 4x - 3 \).

A) 29 

B) 35 

C) 3 

D) \(-3\) 

Answer: A

Objective: (10.6) Use function notation.
65) Find \( f(0) \) when \( f(x) = x^2 + 4x + 4 \).
   A) 4  B) -4  C) 0  D) 16
   Answer: A
   Objective: (10.6) Use function notation.

66) Find \( f(-3) \) when \( f(x) = 3x^2 + 3x - 6 \).
   A) 12  B) 30  C) 24  D) 27
   Answer: A
   Objective: (10.6) Use function notation.

67) Find \( f(19) \) when \( f(x) = |x - 1| \).
   A) 18  B) -20  C) 20  D) -18
   Answer: A
   Objective: (10.6) Use function notation.

Solve the system of equations by the substitution method.

68) \[
\begin{align*}
   x + y &= 56 \\
   y &= -9x
\end{align*}
\]
   A) (-7, 63)  B) (63, -7)  C) infinite number of solutions  D) no solution
   Answer: A
   Objective: (11.2) Use the substitution method to solve a system of linear equations.

Solve the system of equations by the addition method.

69) \[
\begin{align*}
   5x + y &= -58 \\
   5x - y &= 8
\end{align*}
\]
   A) (-5, -33)  B) (-33, -5)  C) infinite number of solutions  D) no solution
   Answer: A
   Objective: (11.3) Use the addition method to solve a system of linear equations.

70) \[
\begin{align*}
   -2x + 3y &= 2 \\
   -3x + 5y &= 2
\end{align*}
\]
   A) (-4, -2)  B) (-2, -4)  C) infinite number of solutions  D) no solution
   Answer: A
   Objective: (11.3) Use the addition method to solve a system of linear equations.

71) \[
\begin{align*}
   x + y &= 7 \\
   x + y &= 4
\end{align*}
\]
   A) no solution  B) (0, 0)  C) (7, 4)  D) (0, 11)
   Answer: A
   Objective: (11.3) Use the addition method to solve a system of linear equations.
72) \[
\begin{align*}
-2x + 2y &= -5 \\
6x - 6y &= 15
\end{align*}
\]  
A) infinite number of solutions  
B) (0, 0)  
C) (-2, 2)  
D) no solution

Answer: A  
Objective: (11.3) Use the addition method to solve a system of linear equations.

Solve.

73) The circle has a radius of 6y centimeters. Find its area. Do not approximate \( \pi \). \((A = \pi r^2)\)

\[6y \text{ cm}\]

A) \(36y^2 \pi \text{ sq cm}\)  
B) \(12y^2 \pi \text{ sq cm}\)  
C) \(36y \pi \text{ sq cm}\)  
D) \(12y \pi \text{ sq cm}\)

Answer: A  
Objective: (12.1) Use the power rule for exponents.

Use the power rule and the power of a product or quotient rule to simplify the expression.

74) \((2a^4b)^2\)  
A) \(4a^8b^2\)  
B) \(2a^6b^2\)  
C) \(2a^8b^2\)  
D) \(4a^6b^2\)

Answer: A  
Objective: (12.1) Use the power rules for products and quotients.

75) \((4x^3y^3)^2\)  
A) \(16x^6y^6\)  
B) \(4x^5y^5\)  
C) \(4x^6y^6\)  
D) \(16x^5y^5\)

Answer: A  
Objective: (12.1) Use the power rules for products and quotients.

76) \[\left(\frac{xy}{4}\right)^2\]  
A) \(\frac{x^2y^2}{16}\)  
B) \(\frac{xy^2}{16}\)  
C) \(\frac{x^2y^2}{4}\)  
D) \(\frac{xy}{16}\)

Answer: A  
Objective: (12.1) Use the power rules for products and quotients.

77) \[\left(\frac{pm^7q^3}{q^6}\right)^2\]  
A) \(\frac{p^3m^{21}q^{18}}{q^{18}}\)  
B) \(\frac{pm^{10}q^9}{q^9}\)  
C) \(\frac{pm^{21}}{q^{18}}\)  
D) \(\frac{p^3m^{10}}{q^9}\)

Answer: A  
Objective: (12.1) Use the power rules for products and quotients.
78) \[ \frac{(2x^3y^3)^4}{z^3} \]

A) \( \frac{16x^{12}y^{12}}{z^{12}} \)  
B) \( 2x^{12}y^{12} \)  
C) \( \frac{16x^7y^7}{z^7} \)  
D) \( \frac{2x^{12}y^{12}}{z^7} \)

Answer: A

Objective: (12.1) Use the power rules for products and quotients.

Use the quotient rule to simplify the expression.

79) \( \frac{d^7}{d} \)

A) \( d^6 \)  
B) \( d^8 \)  
C) \( d^7 - d \)  
D) \( 7 \)

Answer: A

Objective: (12.1) Use the quotient rule for exponents.

80) \( \frac{s^7t^9}{s^2t} \)

A) \( s^5t^8 \)  
B) \( s^9t^{10} \)  
C) \( s^5t^9 \)  
D) \( s^5t^7 \)

Answer: A

Objective: (12.1) Use the quotient rule for exponents.

81) \( \frac{45m^3n^7}{9m^2n^5} \)

A) \( 5mn^2 \)  
B) \( 45mn^2 \)  
C) \( 5m^5n^{12} \)  
D) \( 5n^2 \)

Answer: A

Objective: (12.1) Use the quotient rule for exponents.

Simplify the expression.

82) \( (-4z^2)(5z^3) \)

A) \(-20z^5 \)  
B) \(-20z^6 \)  
C) \( 2000z^5 \)  
D) \( 20z^6 \)

Answer: A

Objective: (12.1) Decide which rule(s) to use to simplify an expression.

83) \( \frac{2x^7}{x^3} \)

A) \( 2x^4 \)  
B) \( 16x^4 \)  
C) \( 2x^{10} \)  
D) \( 8x \)

Answer: A

Objective: (12.1) Decide which rule(s) to use to simplify an expression.

84) \( \frac{2a^8b^5c^{13}}{abc} \)

A) \( 2a^7b^4c^{12} \)  
B) \( 2a^9b^6c^{14} \)  
C) \( \frac{a^7b^4c^{12}}{2} \)  
D) \( \frac{2a^7b^4c^{12}}{abc} \)

Answer: A

Objective: (12.1) Decide which rule(s) to use to simplify an expression.
Simplify.

85) If \( P(x) = -5x + 1 \), find \( P(-3) \).
   A) 16  B) -14  C) 14  D) -16
   Answer: A
   Objective: (12.2) Define polynomial functions.

86) If \( Q(x) = -3x^2 + 4x + 2 \), find \( Q(-1) \).
   A) -5  B) 1  C) 3  D) 9
   Answer: A
   Objective: (12.2) Define polynomial functions.

87) If \( P(x) = 3x^2 - 6x \), find \( P(-5) \).
   A) 105  B) 75  C) 15  D) 64
   Answer: A
   Objective: (12.2) Define polynomial functions.

88) If \( Q(x) = 3x^2 + x - 5 \), find \( Q(0) \).
   A) -5  B) -2  C) 5  D) 0
   Answer: A
   Objective: (12.2) Define polynomial functions.

Perform the indicated operation.

89) \((14x + 5) - (-13x^2 - 7x + 5)\)
   A) \(13x^2 + 21x\)  B) \(13x^2 + 21x - 10\)  C) \(-13x^2 + 7x + 10\)  D) \(13x^2 - 21x\)
   Answer: A
   Objective: (12.2) Add and subtract polynomials.

Multiply.

90) \(9(-8x + 11)\)
   A) \(-72x^2 + 99x\)  B) \(27x^2\)  C) \(-72x^2 + 11x\)  D) \(-8x^2 + 99x\)
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

91) \(-5(-8x^2 + 2x - 3)\)
   A) \(40x^3 - 10x^2 + 15x\)  B) \(40x^3 + 2x - 3\)  
   C) \(40x^2 - 10x + 15\)  D) \(40x^3 - 10x^2 + 15\)
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

92) \(6x^2(-2x^2 + 2x + 6)\)
   A) \(-12x^4 + 12x^3 + 36x^2\)  B) \(-12x^4 + 12x^2 + 36\)  
   C) \(4x^4 + 8x + 12\)  D) \(-12x^4 + 12x + 36\)
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.
93) $2x(8x^2 - 5xy + 4y^2)$
   A) $16x^3 - 10x^2y + 8xy^2$  
   B) $16x^3 - 10xy + 8y^2$  
   C) $16x^3 + 10x^2y + 8xy^2$  
   D) $16x^3y - 5xy + 4y^2$
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

94) $(a + 8)(a + 1)$
   A) $2a + 8$  
   B) $a^2 + 9a + 9$  
   C) $a^2 + 9a + 8$  
   D) $2a^2 + 8$
   Answer: C
   Objective: (12.3) Use the distributive property to multiply polynomials.

95) $(x - 4)(x - 6)$
   A) $x^2 - 10x + 24$  
   B) $x^2 + 10x - 24$  
   C) $2x^2 - 24$  
   D) $2x + 24$
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

96) $(9z + 11)^2$
   A) $81z^2 + 198z + 121$  
   B) $81z^2 + 121$  
   C) $9z^2 + 198z + 121$  
   D) $9z^2 + 121$
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

97) $(2x - 11)(x + 11)$
   A) $2x^2 + 11x - 121$  
   B) $x^2 - 121x + 11$  
   C) $2x^2 + 10x - 121$  
   D) $x^2 + 11x + 10$
   Answer: A
   Objective: (12.3) Use the distributive property to multiply polynomials.

98) $(b - 5)(b^2 + 5b + 3)$
   A) $b^3 + 28b + 15$  
   B) $b^3 - 22b - 15$  
   C) $b^3 - 10b^2 - 22b - 15$  
   D) $b^3 + 10b^2 + 22b + 15$
   Answer: B
   Objective: (12.3) Use the distributive property to multiply polynomials.
Solve.

99) Find the area of the top of the table. Express the area as a product, then multiply and simplify.

\[(11x - 12) \text{ inches} \times (11x + 12) \text{ inches}\]

A) \((121x^2 - 144) \text{ sq in.}\)  
B) \((x^2 - 144) \text{ sq in.}\)  
C) \((121x^2 - 264x - 144) \text{ sq in.}\)  
D) \((121x^2 + 264x - 144) \text{ sq in.}\)

Answer: A

Objective: (12.3) Use the distributive property to multiply polynomials.

100) Find the volume of the rectangular solid. Express the volume as a product, then multiply and simplify.

\[7 - 3x\text{ }\times\text{ }9 - 3x\text{ }\times\text{ }x\]

A) \(9x^3 - 48x^2 + 63x\)  
B) \(9x^2 - 48x + 64\)  
C) \(-9x^3 + 36x^2 + 63x\)  
D) \(-9x^2 + 36x + 64\)

Answer: A

Objective: (12.3) Use the distributive property to multiply polynomials.

Multiply vertically.

101) \((6x - 1)(x^2 - 4x + 1)\)

A) \(6x^3 - 23x^2 + 2x - 1\)  
B) \(6x^3 - 25x^2 + 10x - 1\)  
C) \(6x^3 - 24x^2 + 6x + 1\)  
D) \(6x^3 + 25x^2 - 10x + 1\)

Answer: B

Objective: (12.3) Multiply polynomials vertically.

Multiply.

102) \((3a - 7)^2\)

A) \(9a^2 - 42a + 49\)  
B) \(9a^2 + 49\)  
C) \(3a^2 - 42a + 49\)  
D) \(3a^2 + 49\)

Answer: A

Objective: (12.4) Square a binomial.
103) $(x + 11)(x - 11)$
   A) $x^2 - 121$  
   B) $x^2 - 22$ 
   C) $x^2 - 22x - 121$  
   D) $x^2 + 22x - 121$

Answer: A

Objective: (12.4) Multiply the sum and difference of two terms.

Simplify the expression. Write the result using positive exponents only.

104) $5^{-4}$
   A) $\frac{1}{625}$  
   B) $-625$ 
   C) $625$  
   D) $\frac{1}{20}$

Answer: A

Objective: (12.5) Simplify expressions containing negative exponents.

105) $\frac{2^{7}x^{-5}y^{3}}{2^{-4}x^{-8}y^{6}}$
   A) $\frac{x^{3}}{8y^{3}}$  
   B) $\frac{1}{8x^{8}y^{3}}$ 
   C) $\frac{3x^{3}}{y^{3}}$  
   D) $\frac{8}{x^{3}y^{3}}$

Answer: A

Objective: (12.5) Use all the rules and definitions for exponents to simplify exponential expressions.

Perform the division.

106) $\frac{6r^{8} - 10r^{3}}{2r}$
   A) $3r^{7} - 5r^{2}$  
   B) $6r^{7} - 10r^{2}$ 
   C) $3r^{9} - 5r^{4}$  
   D) $3r^{8} - 5r^{3}$

Answer: A

Objective: (12.6) Divide a polynomial by a monomial.

107) $\frac{21x^{2} + 9x - 11}{3x}$
   A) $7x + 3 - \frac{11}{3x}$  
   B) $7x^{2} + 3x - \frac{11}{3}$ 
   C) $21x + 9 - \frac{11}{3x}$  
   D) $7x - 8$

Answer: A

Objective: (12.6) Divide a polynomial by a monomial.

Find the quotient using long division.

108) $\frac{x^{2} + 9x + 6}{x + 2}$
   A) $x + 7 - \frac{8}{x + 2}$  
   B) $x + 7 + \frac{8}{x + 2}$ 
   C) $\frac{x + 7}{x + 2}$  
   D) $x + 8$

Answer: A

Objective: (12.6) Use long division to divide a polynomial by another polynomial.

Factor out the GCF from the polynomial.

109) $30x + 10$
   A) $10(3x + 1)$  
   B) $5(6x + 2)$ 
   C) $2(15x + 5)$  
   D) $10(3x)$

Answer: A

Objective: (13.1) Factor out the greatest common factor from a polynomial.
110) \(20x^4y + 36xy^3\)
   A) \(4x(5x^3y + 9y^3)\)  
   B) \(4y(5x^4 + 9xy^2)\)  
   C) \(4xy(5x^3 + 9y^2)\)  
   D) \(xy(20x^3 + 36y^2)\)
   Answer: C
   
   Objective: (13.1) Factor out the greatest common factor from a polynomial.

Factor the four-term polynomial by grouping.
111) \(3xy - 9x + 7y - 21\)
   A) \((3x + 7)(y - 3)\)  
   B) \((3x - 3)(y + 7)\)  
   C) \((3x + 7y)(y - 3)\)  
   D) \((3x + y)(7y - 3)\)
   Answer: A
   
   Objective: (13.1) Factor a polynomial by grouping.

Factor the trinomial completely. If the polynomial cannot be factored, write "prime."
112) \(x^2 - x - 56\)
   A) \((x + 7)(x - 8)\)  
   B) \((x + 8)(x - 7)\)  
   C) \((x + 1)(x - 56)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

113) \(x^2 - x - 42\)
   A) \((x + 7)(x - 6)\)  
   B) prime  
   C) \((x + 6)(x - 7)\)  
   D) \((x + 1)(x - 42)\)
   Answer: C
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

114) \(x^2 + x - 30\)
   A) \((x - 5)(x + 6)\)  
   B) \((x - 6)(x + 5)\)  
   C) \((x + 1)(x - 30)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

115) \(x^2 + 4x - 45\)
   A) \((x + 9)(x - 5)\)  
   B) \((x - 9)(x + 5)\)  
   C) \((x - 9)(x + 1)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

116) \(x^2 - 3x - 88\)
   A) \((x - 11)(x + 8)\)  
   B) \((x + 11)(x - 8)\)  
   C) \((x - 88)(x + 1)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

117) \(x^2 - 2x - 35\)
   A) \((x + 7)(x - 5)\)  
   B) \((x - 7)(x - 5)\)  
   C) \((x - 7)(x + 1)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).

118) \(x^2 + 12xy + 32y^2\)
   A) \((x + 4y)(x + 8y)\)  
   B) \((x - 4y)(x + 8y)\)  
   C) \((x - 4y)(x + y)\)  
   D) prime
   Answer: A
   
   Objective: (13.2) Factor trinomials of the form \(x^2 + bx + c\).
119) \( u^2 - 2uv - 8v^2 \)
   A) \( (u + 2v)(u - 4v) \)  
   B) \( (u - 2v)(u + 4v) \)  
   C) \( (u - 2v)(u + v) \)  
   D) prime
   Answer: A
   Objective: (13.2) Factor trinomials of the form \( x^2 + bx + c \).

120) \( u^2 - 3uv - 28v^2 \)
   A) \( (u + 4v)(u - 7v) \)  
   B) \( (u - 4v)(u + v) \)  
   C) \( (u - 4v)(u + 7v) \)  
   D) prime
   Answer: A
   Objective: (13.2) Factor trinomials of the form \( x^2 + bx + c \).

121) \( x^2 + 4xy - 12y^2 \)
   A) \( (x + 6y)(x - 2y) \)  
   B) \( (x - 6y)(x + 2y) \)  
   C) \( (x - 6y)(x + y) \)  
   D) \( (x - y)(x + 2y) \)
   Answer: A
   Objective: (13.2) Factor trinomials of the form \( x^2 + bx + c \).

122) \( x^2 + 3xy - 18y^2 \)
   A) \( (x - 6y)(x + 3y) \)  
   B) \( (x + 6y)(x - 3y) \)  
   C) \( (x - 6y)(x + y) \)  
   D) \( (x - y)(x + 3y) \)
   Answer: B
   Objective: (13.2) Factor trinomials of the form \( x^2 + bx + c \).

123) \( 9x^2 - 9x - 54 \)
   A) \( 9(x + 2)(x - 3) \)  
   B) \( (9x + 18)(x - 3) \)  
   C) \( 9(x - 2)(x + 3) \)  
   D) prime
   Answer: A
   Objective: (13.2) Factor out the greatest common factor and then factor a trinomial of the form \( x^2 + bx + c \).

124) \( 8x^2 - 24xy - 32y^2 \)
   A) \( 8(x + y)(x - 4y) \)  
   B) \( 8(x - y)(x + 4y) \)  
   C) \( 8x - 8y)(x + 4y) \)  
   D) prime
   Answer: A
   Objective: (13.2) Factor out the greatest common factor and then factor a trinomial of the form \( x^2 + bx + c \).

125) \( 3x^2 - 18x + 24 \)
   A) \( 3(x - 4)(x - 2) \)  
   B) \( 3(x - 8)(x + 1) \)  
   C) \( (x - 4)(3x - 6) \)  
   D) prime
   Answer: A
   Objective: (13.2) Factor out the greatest common factor and then factor a trinomial of the form \( x^2 + bx + c \).

**Factor the binomial completely.**

126) \( z^2 - 121 \)
   A) prime  
   B) \( (z - 11)^2 \)  
   C) \( (z + 11)(z - 11) \)  
   D) \( (z + 11)^2 \)
   Answer: C
   Objective: (13.5) Factor the difference of two squares.

127) \( 81x^2 - 49 \)
   A) \( (9x + 7)(9x - 7) \)  
   B) \( (9x - 7)^2 \)  
   C) \( (9x + 7)^2 \)  
   D) prime
   Answer: A
   Objective: (13.5) Factor the difference of two squares.
128) $121 - w^2$
   A) $(11 - w)(11 + w)$   B) $(11 + w)^2$   C) $(11 - w)^2$   D) prime
   Answer: A
   Objective: (13.5) Factor the difference of two squares.

129) $64 - 81x^2$
   A) $(8 + 9x)(8 - 9x)$   B) $(8 - 9x)^2$   C) $(8 + 9x)^2$   D) prime
   Answer: A
   Objective: (13.5) Factor the difference of two squares.

130) $w^2r^2 - 1$
   A) $(wr + 1)(wr - 1)$   B) $(wr + 1)^2$   C) $(wr - 1)^2$   D) prime
   Answer: A
   Objective: (13.5) Factor the difference of two squares.

131) $25x^2 - 36y^2$
   A) $(5x + 6y)(5x - 6y)$   B) $(5x - 6y)^2$   C) $(5x + 6y)^2$   D) prime
   Answer: A
   Objective: (13.5) Factor the difference of two squares.

132) $x^2 - \frac{25}{64}$
   A) $\left(x + \frac{5}{8}\right)\left(x - \frac{5}{8}\right)$   B) $\left(x - \frac{5}{8}\right)^2$   C) $\left(x + \frac{5}{8}\right)\left(\frac{5}{8} - x\right)$   D) $\left(x + \frac{5}{8}\right)^2$
   Answer: A
   Objective: (13.5) Factor the difference of two squares.

Solve the equation.
133) $(x - 6)(x + 4) = 0$
   A) 6, -4   B) -6, 4   C) 6, -6, 4, -4   D) 6, 4
   Answer: A
   Objective: (13.6) Solve quadratic equations by factoring.

134) $x(x + 17) = 0$
   A) -17, 0   B) 17, 0   C) 1, -17   D) -1, -17
   Answer: A
   Objective: (13.6) Solve quadratic equations by factoring.

135) $x^2 + 2x - 80 = 0$
   A) -10, 8   B) 10, 8   C) -10, 1   D) 10, -8
   Answer: A
   Objective: (13.6) Solve quadratic equations by factoring.
136) \(x^2 - 7x - 18 = 0\)  
A) 9, -2  
B) -9, 2  
C) -9, -2  
D) -18, 0

Answer: A  
Objective: (13.6) Solve quadratic equations by factoring.

137) \(x^2 - x = 72\)  
A) -8, 9  
B) 8, 9  
C) 1, 72  
D) -8, -9

Answer: A  
Objective: (13.6) Solve quadratic equations by factoring.

138) \(x^2 + 3x = 28\)  
A) -7, 4  
B) 7, 4  
C) -7, 1  
D) 7, -4

Answer: A  
Objective: (13.6) Solve quadratic equations by factoring.

139) \(x^2 - 2x = 48\)  
A) 8, -6  
B) 8, 6  
C) -8, 1  
D) -8, 6

Answer: A  
Objective: (13.6) Solve quadratic equations by factoring.

140) \(9x^2 - 16 = 0\)  
A) \(\frac{4}{3}, \frac{-4}{3}\)  
B) \(\frac{4}{3}\)  
C) \(\frac{-4}{3}\)  
D) \(\frac{4}{3}, \frac{-4}{3}, 0\)

Answer: A  
Objective: (13.6) Solve quadratic equations by factoring.

141) \(10x^3 + 70x^2 + 120x = 0\)  
A) 0, -3, -4  
B) -3, -4  
C) 0, 3, 4  
D) -\(\frac{1}{3}\), -4

Answer: A  
Objective: (13.6) Solve equations with degree greater than 2 by factoring.

142) \(y^3 + 6y^2 + 9y = 0\)  
A) 0, -3  
B) 0, 3  
C) 3, -3  
D) 0, -3, 3

Answer: A  
Objective: (13.6) Solve equations with degree greater than 2 by factoring.

143) \(9x^3 - 16x = 0\)  
A) \(\frac{4}{3}, \frac{-4}{3}, 0\)  
B) \(\frac{4}{3}\)  
C) \(\frac{-4}{3}\)  
D) \(\frac{4}{3}, \frac{-4}{3}\)

Answer: A  
Objective: (13.6) Solve equations with degree greater than 2 by factoring.
Solve.

144) The area of a square is 49 square miles. Find the length of a side of the square.

A) 7 mi  B) 12.25 mi  C) 24.5 mi  D) −7 mi

Answer: A

Objective: (13.7) Solve problems that can be modeled by quadratic equations.

Find the domain of the rational expression.

145) \( f(x) = \frac{5x}{4 - x} \)

A) \( \{x \mid x \text{ is a real number and } x \neq 4\} \)  B) \( \{x \mid x \text{ is a real number and } x \neq 0\} \)
C) \( \{x \mid x \text{ is a real number and } x \neq -4\} \)  D) \( \{x \mid x \text{ is a real number and } x \neq 0, x \neq -4\} \)

Answer: A

Objective: (14.1) Find the domain of a rational expression.

Simplify the expression.

146) \( \frac{15x^3}{5x} \)

A) \( 3x^2 \)  B) \( 10x^2 \)  C) \( 10 \)  D) \( 3x \)

Answer: A

Objective: (14.1) Simplify or write rational expressions in lowest terms.

147) \( \frac{24x^2 + 18x}{24x} \)

A) \( \frac{4x + 3}{4} \)  B) \( x^2 + 18 \)  C) \( \frac{4x - 3}{4} \)  D) \( x^2 + 3 \)

Answer: A

Objective: (14.1) Simplify or write rational expressions in lowest terms.

148) \( \frac{-6x - 6y}{x + y} \)

A) \( -6 \)  B) \( -\frac{1}{6} \)  C) \( \frac{1}{6} \)  D) \( 6 \)

Answer: A

Objective: (14.1) Simplify or write rational expressions in lowest terms.

149) \( \frac{y^2 + 10y + 24}{y^2 + 13y + 42} \)

A) \( \frac{y + 4}{y + 7} \)  B) \( \frac{10y + 24}{13y + 42} \)  C) \( \frac{10y + 4}{13y + 7} \)  D) \( -\frac{y^2 + 10y + 24}{y^2 + 13y + 42} \)

Answer: A

Objective: (14.1) Simplify or write rational expressions in lowest terms.
Solve the problem.

150) If \( f(x) = \frac{x - 8}{6x + 7} \), find \( f(-2) \).

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

Answer: A

Objective: (14.1) Use rational functions in applications.

151) If \( f(x) = \frac{x^3 + 4}{x^2 - 4} \), find \( f(-4) \).

A) -5       B) -\frac{15}{4}       C) -\frac{16}{3}       D) \frac{5}{3}

Answer: A

Objective: (14.1) Use rational functions in applications.

152) If \( f(x) = \frac{x^2 - 2}{x^3 + 3x} \), find \( f(2) \).

A) \frac{1}{7}       B) \frac{1}{4}       C) \frac{2}{11}       D) \frac{2}{7}

Answer: A

Objective: (14.1) Use rational functions in applications.

Find the product and simplify.

153) \( \frac{2x^2}{4} \cdot \frac{24}{x^3} \)

A) \frac{12}{x}       B) \frac{x}{12}       C) \frac{12x^2}{x^3}       D) \frac{48x^2}{4x^3}

Answer: A

Objective: (14.2) Multiply rational expressions.

Find the quotient and simplify.

154) \( \frac{2x^2}{y^3} \div \frac{6z^2y^3}{7} \)

A) \frac{7}{3y^6}       B) \frac{12z^4}{7}       C) \frac{7}{3}       D) \frac{7z^4}{3y^6}

Answer: A

Objective: (14.2) Divide rational expressions.

Solve the equation.

155) \( \frac{x + 3}{4} = \frac{x + 4}{5} \)

A) 1       B) \frac{7}{9}       C) \frac{7}{20}       D) \frac{1}{20}

Answer: A

Objective: (14.5) Solve equations containing rational expressions.
156) \[ \frac{5 - a}{a} + \frac{3}{4} = \frac{7}{a} \]

A) -8  
B) 4  
C) 8  
D) -4

Answer: A
Objective: (14.5) Solve equations containing rational expressions.

Graph the function.
157) \( f(x) = |x + 2| \)

Answer: A
Objective: (15.2) Graph nonlinear functions.
Answer: A

Objective: (15.2) Graph nonlinear functions.
159) \( g(x) = \sqrt{x - 4} \)

Answer: A

Objective: (15.2) Graph nonlinear functions.
Solve the compound inequality. Graph the solution set.

160) \(13 \leq 4t + 5 \leq 29\)  

A) \([2, 6]\)  

B) \((2, 6)\)  

C) \([-6, -2]\)  

D) \((-6, -2)\)

Answer: A  
Objective: (16.1) Solve compound inequalities containing "and."

161) \(-25 \leq -3c - 4 < -10\)

A) \(2, 7\)  

B) \([2, 7]\)  

C) \([-7, -2]\)  

D) \((-7, -2)\)

Answer: A  
Objective: (16.1) Solve compound inequalities containing "and."

Solve the absolute value equation.

162) \(|x + 3| = 6\)

A) \(-9, 3\)  

B) \(9, 3\)  

C) \(-3\)  

D) \(\emptyset\)

Answer: A  
Objective: (16.2) Solve absolute value equations.
Solve the inequality. Graph the solution set.

163) \(|x + 18| < 9\)
   A) \((-27, -9)\)
   B) \((9, 27)\)
   C) \((-\infty, -9)\)
   D) \((-\infty, -27)\)

Answer: A

Objective: (16.3) Solve absolute value inequalities of the form \(|x| < a\).

164) \(|x + 3| > 4\)
   A) \((-\infty, -7) \cup (1, \infty)\)
   B) \((-1, 7)\)
   C) \((-7, 1)\)
   D) \((1, \infty)\)

Answer: A

Objective: (16.3) Solve absolute value inequalities of the form \(|x| > a\).

Evaluate.

165) If \(f(x) = \sqrt{2x + 6}\), find the value of \(f(15)\).
   A) 6  
   B) 36  
   C) 30  
   D) \(\sqrt{30}\)

Answer: A

Objective: (17.1) Find function values of square and cube roots.
Solve.

166) \( \sqrt{x + 4} = 8 \)
A) 60 B) 64 C) 68 D) 144
Answer: A
Objective: (17.6) Solve equations that contain radical expressions.

167) \( \sqrt{x - 1} = 2 \)
A) 5 B) 4 C) 3 D) 9
Answer: A
Objective: (17.6) Solve equations that contain radical expressions.

168) \( \sqrt{x + 5} - 7 = 0 \)
A) 44 B) 49 C) 54 D) 144
Answer: A
Objective: (17.6) Solve equations that contain radical expressions.

Use the square root property to solve the equation.

169) \( x^2 = 225 \)
A) \(-15, 15\) B) 15 C) \(-16, 16\) D) 112.5
Answer: A
Objective: (18.1) Use the square root property to solve quadratic equations.

170) \( x^2 = 11 \)
A) \(-\sqrt{11}, \sqrt{11}\) B) 121 C) \(\frac{11}{2}\) D) \(\sqrt{11}\)
Answer: A
Objective: (18.1) Use the square root property to solve quadratic equations.

171) \( (x - 5)^2 = 36 \)
A) 11, -1 B) 41 C) 6, -6 D) -1, -11
Answer: A
Objective: (18.1) Use the square root property to solve quadratic equations.

172) \( (x + 2)^2 = 15 \)
A) \(-2 - \sqrt{15}, -2 + \sqrt{15}\) B) \(2 - \sqrt{15}, 2 + \sqrt{15}\)
C) \(-\sqrt{15}, \sqrt{15}\) D) 13
Answer: A
Objective: (18.1) Use the square root property to solve quadratic equations.

Use the quadratic formula to solve the equation.

173) \( x^2 - 2x - 48 = 0 \)
A) -6, 8 B) 6, -8 C) 6, 8 D) -48, 0
Answer: A
Objective: (18.2) Solve quadratic equations by using the quadratic formula.
174) \( x^2 + 24x + 144 = 0 \)
   A) \(-12\)   B) \(12\)   C) \(-12, 12\)   D) \(12 - i, 12 + i\)
   Answer: A
   Objective: (18.2) Solve quadratic equations by using the quadratic formula.

175) \( x^2 + 18x + 70 = 0 \)
   A) \(-9 - \sqrt{11}, -9 + \sqrt{11}\)   B) \(9 + \sqrt{11}\)
   C) \(9 - \sqrt{70}, 9 + \sqrt{70}\)   D) \(-18 + \sqrt{70}\)
   Answer: A
   Objective: (18.2) Solve quadratic equations by using the quadratic formula.

176) \( x^2 - 8x + 20 = 0 \)
   A) \(4 - 2i, 4 + 2i\)   B) \(4 - 4i, 4 + 4i\)   C) \(4 + 2i\)   D) \(6, 2\)
   Answer: A
   Objective: (18.2) Solve quadratic equations by using the quadratic formula.

177) \( 2x^2 - 7x - 9 = 0 \)
   A) \(\frac{9}{2}, -1\)   B) \(\frac{2}{9}, -1\)   C) \(\frac{2}{9}, 1\)   D) \(\frac{2}{9}, 0\)
   Answer: A
   Objective: (18.2) Solve quadratic equations by using the quadratic formula.

178) \( 3x^2 - 5x - 8 = 0 \)
   A) \(\frac{8}{3}, -1\)   B) \(\frac{3}{8}, -1\)   C) \(\frac{3}{8}, 1\)   D) \(\frac{3}{8}, 0\)
   Answer: A
   Objective: (18.2) Solve quadratic equations by using the quadratic formula.

Solve.

179) The product of a number and 2 less than the number is 15. Find the number.
   A) \(-3\) or \(5\)   B) \(-2\) or \(6\)   C) \(-6\) or \(2\)   D) \(-5\) or \(3\)
   Answer: A
   Objective: (18.3) Solve problems that lead to quadratic equations.
Match the function with its graph.

180) \( f(x) = x^2 - 4 \)

A) \[
\begin{array}{c}
\text{Graph A} \\
\text{Vertex: (0, -4)} \\
\text{Intercepts: } \\
\text{Direction: Upward}
\end{array}
\]

B) \[
\begin{array}{c}
\text{Graph B} \\
\text{Vertex: (0, 4)} \\
\text{Intercepts: } \\
\text{Direction: Downward}
\end{array}
\]

C) \[
\begin{array}{c}
\text{Graph C} \\
\text{Vertex: (0, 4)} \\
\text{Intercepts: } \\
\text{Direction: Upward}
\end{array}
\]

D) \[
\begin{array}{c}
\text{Graph D} \\
\text{Vertex: (0, -4)} \\
\text{Intercepts: } \\
\text{Direction: Downward}
\end{array}
\]

Answer: A

Objective: (18.6) Graph a quadratic function and find the vertex, intercepts, and direction of opening.
181) \( f(x) = -x^2 + 1 \)

A) \[
\begin{array}{c}
\text{y} \\
\text{-10} \\
\text{5} \\
\text{10} \\
\text{x}
\end{array}
\]

B) \[
\begin{array}{c}
\text{y} \\
\text{-5} \\
\text{-10} \\
\text{x}
\end{array}
\]

C) \[
\begin{array}{c}
\text{y} \\
\text{-10} \\
\text{-5} \\
\text{x}
\end{array}
\]

D) \[
\begin{array}{c}
\text{y} \\
\text{-10} \\
\text{-5} \\
\text{x}
\end{array}
\]

Answer: A

Objective: (18.6) Graph a quadratic function and find the vertex, intercepts, and direction of opening.

Solve.

182) Four bacteria are placed in a petri dish. The population will triple every day. The formula for the number of bacteria in the dish on day \( t \) is \( N(t) = 4(3)^t \), where \( t \) is the number of days after the four bacteria are placed in the dish. How many bacteria are in the dish five days after the four bacteria are placed in the dish?

A) 972 bacteria  
B) 60 bacteria  
C) 500 bacteria  
D) 12 bacteria

Answer: A

Objective: (19.3) Solve problems modeled by exponential equations.
Answer Key
Testname: AAFM041024350MTSI

1) A
2) A
3) A
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34) A
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36) A
37) A
38) D
39) C
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Answer Key
Testname: AAFM041024350MTSI

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92) A
93) A
94) C
95) A
96) A
97) A
98) B
99) A
100) A
Answer Key
Testname: AAFM041024350MTSI

101) B
102) A
103) A
104) A
105) A
106) A
107) A
108) A
109) A
110) C
111) A
112) A
113) C
114) A
115) A
116) A
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182) A