SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Rationalize the denominator.

1) $\dfrac{\sqrt{25}}{\sqrt{11}}$

1) _____

2) $\dfrac{5}{8 - \sqrt{2}}$

2) _____

Find the product.

3) $(6x + 5)(3x - 8)$

3) _____

Rationalize the denominator.

4) $\dfrac{7}{8 - \sqrt{6}}$

4) _____

Find the product.

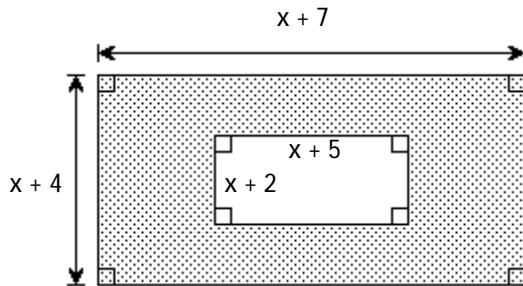5) $(x + 10)(x^2 + 6x - 7)$

5) _____

6) $(8x^3 + 3)(x^2 + 8)$

6) _____

Solve the problem.

7) Write a polynomial in standard form that represents the area of the shaded region.

7) _____

Find the product.

8) $(5x^2 + 12x)(5x^2 - 12x)$

8) _____

9) $(10x^2 - 7)^2$

9) _____

Perform the indicated operations.

10) $(12x^4y^2 - 6x^2y^2 + 7xy) + (9x^4y^2 - 11x^2y^2 + 4xy)$

10) _____

Find the product.

11) $(7x - 4y)^2$

11) _____

12) $(7xy^2 - 13y)(7xy^2 + 13y)$ 12) _____

13) $(p - q)(p^2 + pq + q^2)$ 13) _____

Factor out the greatest common factor.

14) $14x^4 - 4x^3 + 8x^2$ 14) _____

Factor the trinomial, or state that the trinomial is prime.

15) $x^2 - x - 48$ 15) _____

16) $2x^2 - 17x + 35$ 16) _____

17) $12x^2 + 17x + 6$ 17) _____

18) $6x^2 + 7xy + y^2$ 18) _____

Factor the difference of two squares.

19) $25x^2 - 36y^2$ 19) _____

20) $(81x^4 - 1)$ 20) _____

Factor using the formula for the sum or difference of two cubes.

21) $x^3 + 8$ 21) _____

22) $8x^3 - 125$ 22) _____

Factor completely, or state that the polynomial is prime.

23) $8x^4 - 8$ 23) _____

24) $5x^2 - 5x - 30$ 24) _____

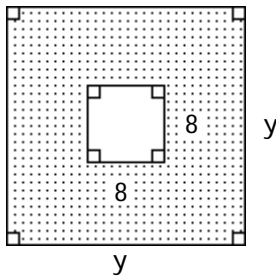25) $108y^4 - 75y^2$ 25) _____

26) $2x^3 - 98a^2x + 8x^2 + 8x$ 26) _____
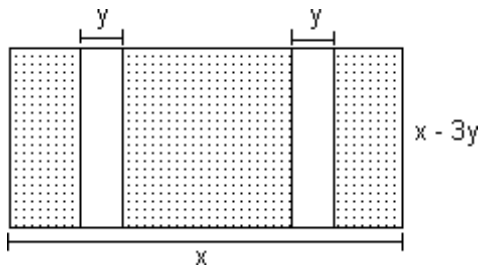
Solve the problem.

27) Write an expression for the area of the shaded region and express it in factored form.
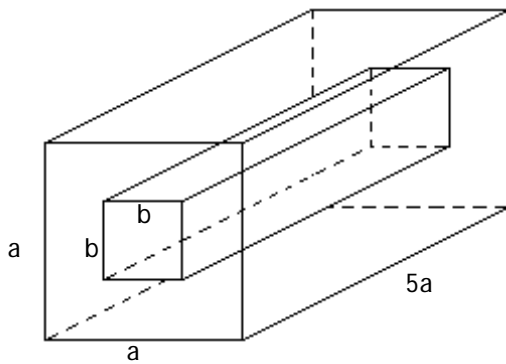
27) _____

28) Write an expression for the area of the shaded region and express it in factored form.

28) _____

29) Find the formula for the volume of the region outside the smaller rectangular solid and insi larger rectangular solid. Express the volume in factored form.

29) _____

Factor by grouping. Assume any variable exponents represent whole numbers.

30) $x^3 + 7x - 3x^2 - 21$

30) _____

Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression.

31) $\dfrac{x^2 + 11x + 28}{x^2 + 14x + 49}$

31) _____

Multiply or divide as indicated.

32) $\dfrac{x^2 + 9x + 20}{x^2 + x - 20} \cdot \dfrac{x^2 - 25}{x^2 - x - 20}$

33) $\dfrac{x^2 + 12x + 35}{x^2 + 14x + 45} \cdot \dfrac{x^2 + 18x + 81}{x^2 + 16x + 63}$

33) _____

34) $\dfrac{(x + 5)^2}{x - 5} \div \dfrac{x^2 - 25}{5x - 25}$

34) _____

35) $\dfrac{x^2 + 9x + 14}{x^2 + 15x + 56} \div \dfrac{x^2 + 2x}{x^2 + 5x - 24}$

35) _____

Add or subtract as indicated.

36) $\dfrac{5}{x + 2} - \dfrac{3}{x - 2}$

36) _____

37) $\dfrac{2}{x^2 - 3x + 2} + \dfrac{7}{x^2 - 1}$
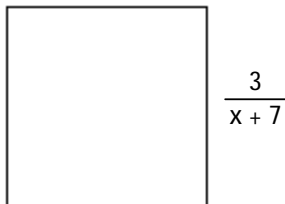
37) _____

38) $\dfrac{x - 6}{x^2 + 4x - 5} + \dfrac{2x - 3}{x^2 + 2x - 15}$
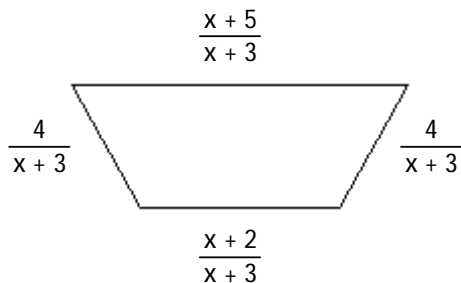
38) _____

Solve the problem.

39) Express the perimeter of the square as a single rational expression.

39) _____

$\dfrac{3}{x + 7}$

40) Express the perimeter of the trapezoid as a single rational expression.

40) _____

$\dfrac{x + 5}{x + 3}$

$\dfrac{4}{x + 3}$

$\dfrac{4}{x + 3}$

$\dfrac{x + 2}{x + 3}$

4

Simplify the complex rational expression.

41) $\dfrac{x - \dfrac{x}{x - 2}}{x - 3}$

41) _____

42) $\dfrac{\dfrac{x}{x + 6} + 1}{\dfrac{27}{x^2 - 36} + 1}$

42) _____

43) $\dfrac{\dfrac{36y^2 - 16x^2}{xy}}{\dfrac{6}{x} - \dfrac{4}{y}}$

43) _____

44) $\dfrac{\dfrac{4}{x^2 - 3x - 28} - \dfrac{1}{x - 7}}{\dfrac{1}{x + 4} + 1}$

44) _____

Simplify the expression.

45) $\dfrac{\sqrt{7 - x^2} + \dfrac{x^2}{\sqrt{7 - x^2}}}{7 - x^2}$

45) _____

Rationalize the numerator.

46) $\dfrac{\sqrt{x} - \sqrt{y}}{x^2 - y^2}$

46) _____

Solve the linear equation.

47) $8y + 4(6 + y) = 3(y - 1) + 10y$

47) _____

48) $\dfrac{x}{16} + \dfrac{9}{8} = \dfrac{x + 3}{8}$

48) _____

49) $\dfrac{x - 6}{-3} + \dfrac{x + 9}{9} = x + 4$

49) _____

First, write the value or values of the variable that make a denominator zero. Then solve the equation.

50) $\dfrac{7}{x - 4} + 1 = \dfrac{3}{x - 4}$

50) _____

51) $\dfrac{5}{x + 1} + \dfrac{2}{x - 1} = \dfrac{4}{(x + 1)(x - 1)}$

51) _____

5

Solve the rational equation.

52) $\dfrac{2}{x-7} + \dfrac{7}{7-x} = \dfrac{8}{x+3}$

52) _____

Solve the problem.

53) The formula $C = \dfrac{21{,}000 + 220x}{x}$ models the average cost per unit, C, for Electrostuff to manufacture x units of Electrogadget IV. How many units must the company produce to have an average cost per unit of $390?

53) _____

Solve the formula for the specified variable.

54) $A = \dfrac{1}{2}h(a+b)$ for a

54) _____

55) $A = P(1 + nr)$ for n

55) _____

56) $A = \dfrac{1}{2}h(B+b)$ for B

56) _____

Solve the absolute value equation or indicate that the equation has no solution.

57) $\left| 4 - \dfrac{11}{6}x \right| = 12$

57) _____

58) $\left| 1 - \dfrac{3}{4}x \right| + 2 = 4$

58) _____

Solve the equation by factoring.

59) $3x^2 - 8x = 0$

59) _____

60) $-6x - 2 = (3x + 1)^2$

60) _____

Solve the quadratic equation by the square root property.

61) $3(x - 2)^2 = 15$

61) _____

62) $(3x - 5)^2 = 8$

62) _____

Solve the quadratic equation by completing the square.

63) $x^2 + 8x - 3 = 0$

63) _____

64) $x^2 + 3x - 9 = 0$

64) _____

Solve the quadratic equation using the quadratic formula.

65) $3x^2 + x - 1 = 0$

65) _____

66) $3x^2 = -12x - 2$

66) _____

Compute the discriminant. Then determine the number and type of solutions for the given equation.

67) $x^2 - 2x + 1 = 0$ 67) _____

68) $5x^2 = 4x - 2$ 68) _____

Solve the radical equation, and check all proposed solutions.
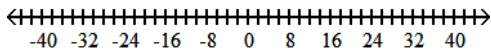
69) $\sqrt{20x - 20} = x + 4$ 69) _____

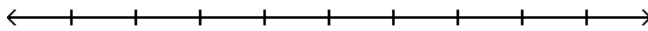70) $x - \sqrt{3x - 2} = 4$ 70) _____

71) $\sqrt{2x} + 10 = x + 6$ 71) _____

Solve the linear inequality. Other than ∅, use interval notation to express the solution set and graph the solution set on a number line.

72) $\dfrac{x}{5} - \dfrac{1}{6} \le \dfrac{x}{2} + 2$ 72) _____

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<++++++++++++++++++++++++++++++++++++++++++++++>
  -40  -32  -24  -16  -8   0    8   16   24   32   40
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73) $-4(2x + 1) \ge 2[4x - 3(x - 1)]$ 73) _____

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<---+----+----+----+----+----+----+----+----+--->
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Solve the problem.

74) It takes 18 minutes to set up a candy making machine. Once the machine is set up, it produces 20 candies per minute. Use an inequality to find the number of candies that can be produced in 7 hours if the machine has not yet been set up.   74) _____
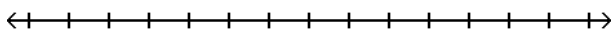
75) Claire has received scores of 85, 88, 87, and 95 on her algebra tests. What score must she receive on the fifth test to have an overall test score average of at least 90?   75) _____

Solve the compound inequality. Other than ∅, use interval notation to express the solution set and graph the solution set on a number line.
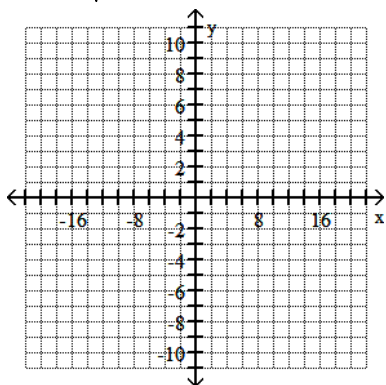
76) $10 \le 4x - 2 \le 18$ 76) _____

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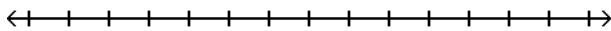
77) $-7 \le -2x + 5 \le 1$ 77) _____

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Begin by graphing the standard square root function $f(x) = \sqrt{x}$. Then use transformations of this graph to graph the given function.

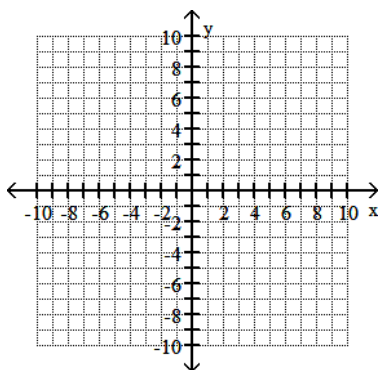78) $g(x) = \sqrt{\dfrac{1}{2}x + 1}$

78) _____

79) Begin by graphing the standard function $f(x) = x^3$ Then use transformations of this graph to graph the given function.

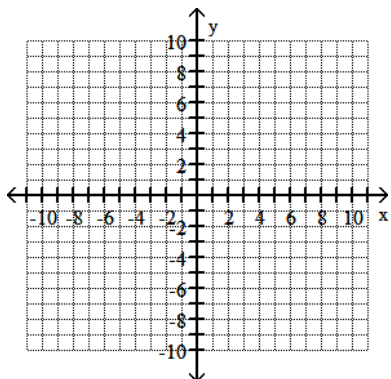79) $h(x) = \dfrac{1}{2}(2x)^3$

79) _____

Begin by graphing the standard quadratic function $f(x) = x^2$. Then use transformations of this graph to graph the given function.
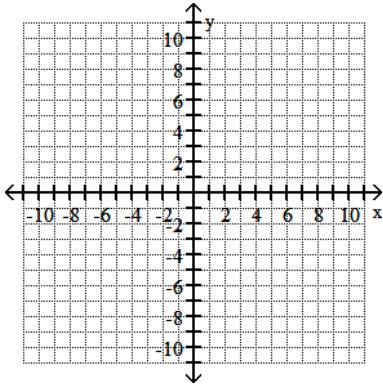
80) $g(x) = -\dfrac{1}{2}(x + 7)^2 - 2$

80) _____

Begin by graphing the standard absolute value function f(x) = |x|. Then use transformations of this graph to graph the given function.

81) $g(x) = \frac{1}{4}|x - 6| + 3$

81) _____

Given functions f and g, perform the indicated operations.

82) $f(x) = \sqrt{4x + 2}, \quad g(x) = \sqrt{25x - 16}$
   Find fg.

82) _____

Given functions f and g, determine the domain of f + g.

83) $f(x) = 2x + 1, \quad g(x) = \frac{2}{x + 4}$

83) _____

Find the domain of the indicated combined function.

84) Find the domain of (f + g)(x) when f(x) = 9 - 2x and g(x) = -7x + 9.

84) _____

For the given functions f and g, find the indicated composition.

85) $f(x) = \frac{4}{x + 6}, \quad g(x) = \frac{7}{8x}$

   (f g)(x)

85) _____

86) $f(x) = 4x^2 + 2x + 5, \quad g(x) = 2x - 4$
   (g f)(x)

86) _____

Find the domain of the composite function f g.

87) $f(x) = x + 4, \quad g(x) = \frac{5}{x + 6}$

87) _____

88) $f(x) = \sqrt{x}; \quad g(x) = 5x + 25$

88) _____

Find functions f and g so that h(x) = (f ∘g)(x).

89) $h(x) = \frac{9}{x^2} + 1$

89) _____

90) $h(x) = (6x - 14)^8$

90) _____

Find the domain of the indicated combined function.

91) Find the domain of $(fg)(x)$ when $f(x) = \sqrt{6x + 5}$ and $g(x) = \sqrt{5x - 4}$.
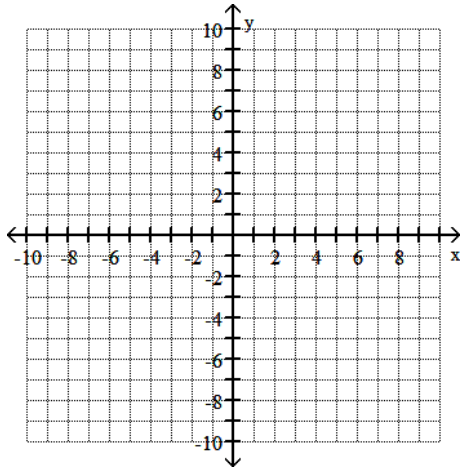
91) _____

Find the inverse of the one-to-one function.

92) $f(x) = \dfrac{5}{7x - 8}$
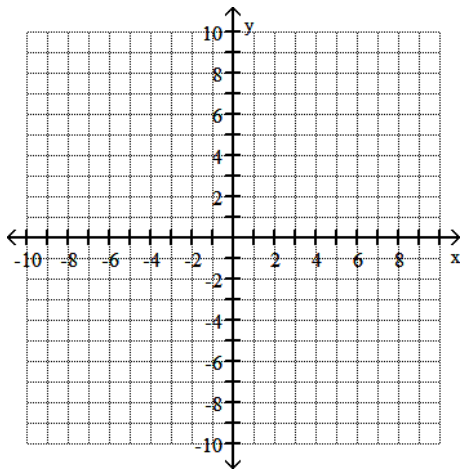
92) _____

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

93) _____

94) $f(x) = \sqrt[3]{x - 6}$

94) _____

Graph f as a solid line and f^{-1} as a dashed line in the same rectangular coordinate space. Use interval notation to give the domain and range of f and f^{-1}.

95) $f(x) = x^2 - 6, x \geq 0$

95) _____

96) $f(x) = (x - 4)^2, x \geq 4$

96) _____

10

Use the Intermediate Value Theorem to determine whether the polynomial function has a real zero between the given integers.

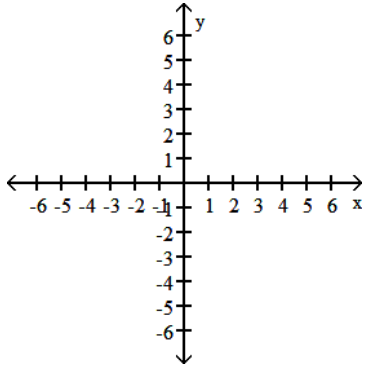97) $f(x) = 2x^3 + 5x + 9$; between -2 and -1

97) _____

98) $f(x) = 4x^4 - 10x^2 - 1$; between 1 and 2
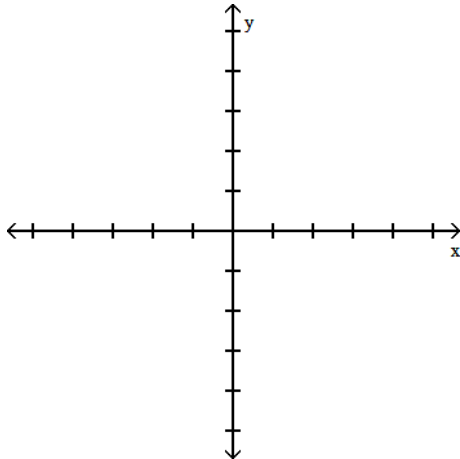
98) _____

Graph the polynomial function.

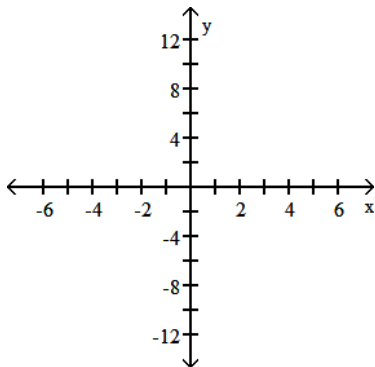99) $f(x) = x(x - 2)(x - 1)$

99) _____

100) $f(x) = (x + 1)^2(x^2 - 25)$

100) _____

101) $f(x) = (x - 5)(x - 3)(x - 2)^2$

101) _____

Find a rational zero of the polynomial function and use it to find all the zeros of the function.

102) $f(x) = x^3 - 8x^2 + 16x - 8$ 102) _____

103) $f(x) = 2x^4 - 17x^3 + 59x^2 - 83x + 39$ 103) _____

Solve the polynomial equation. In order to obtain the first root, use synthetic division to test the possible rational roots.

104) $x^3 + 7x^2 + 19x + 13 = 0$ 104) _____

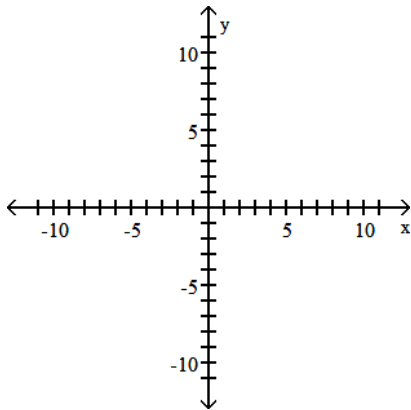105) $2x^4 - 19x^3 + 74x^2 - 127x + 78 = 0$ 105) _____

Graph the rational function.

106) $f(x) = \dfrac{2x}{x - 1}$ 106) _____

107) $f(x) = -\dfrac{3}{x^2 - 16}$ 107) _____
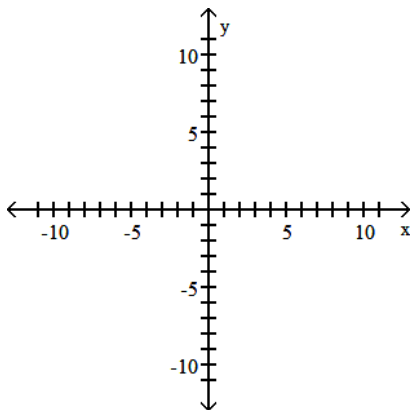
108) $f(x) = \dfrac{x - 2}{x^2 - x - 12}$

108) _____
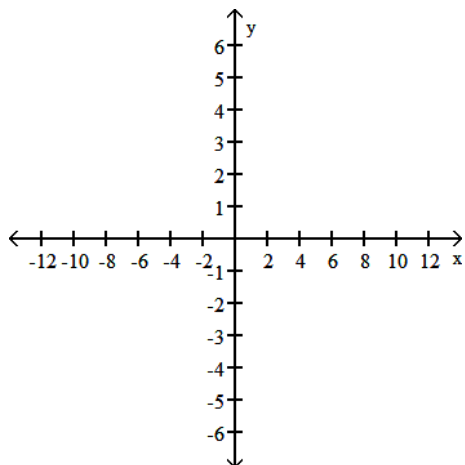
109) $f(x) = \dfrac{5x^2}{x^2 + 25}$

109) _____
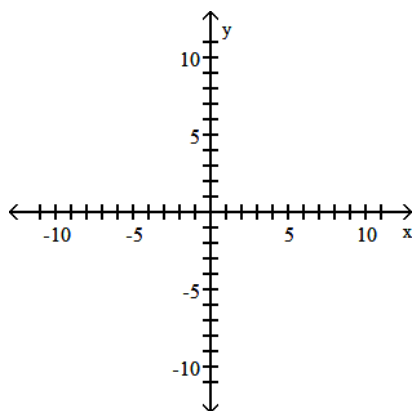
Find the indicated intercept(s) of the graph of the function.

110) x-intercepts of $f(x) = \dfrac{(x - 8)(2x + 9)}{x^2 + 3x - 6}$

110) _____

111) x-intercepts of $f(x) = \dfrac{x + 7}{x^2 + 5x - 3}$

111) _____

Graph the function.

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

112) _____
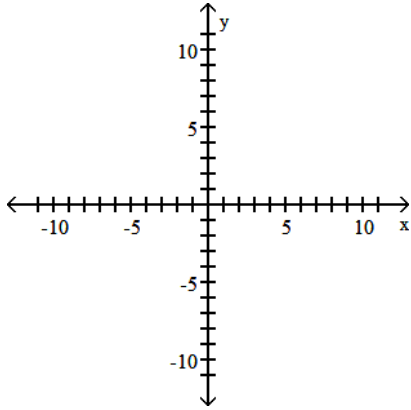
113) $f(x) = \dfrac{x^2 + 4x - 6}{x - 6}$

113) _____
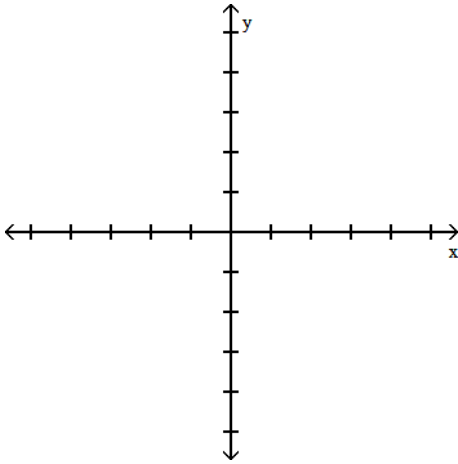
114) $y = 3 \sin 3x$

114) _____
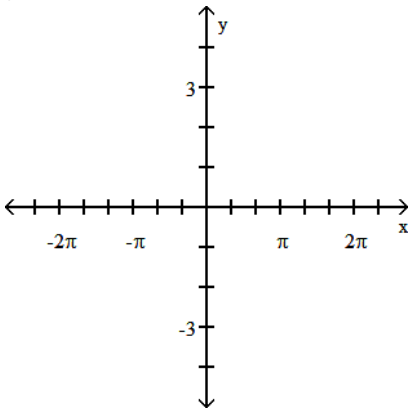
115) $y = \dfrac{2}{3} \sin\left(x + \dfrac{\pi}{3}\right)$
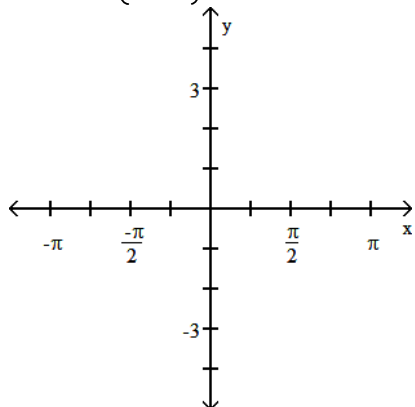
115) _____

116) $y = 3 \cos 2\pi x$

116) _____

117) $y = -3 \cos (3x - \pi)$

117) _____

15
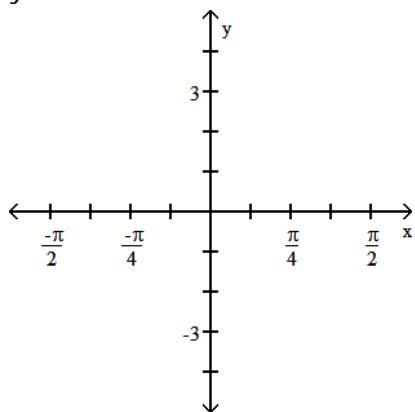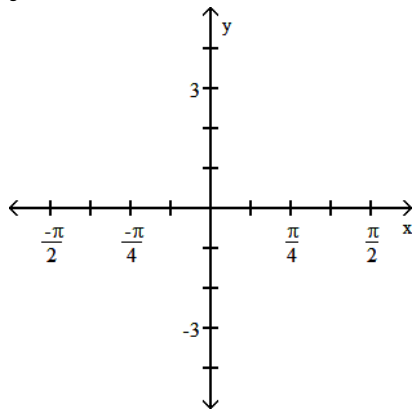
118) $y = -3 \cos (2\pi x + 3\pi)$
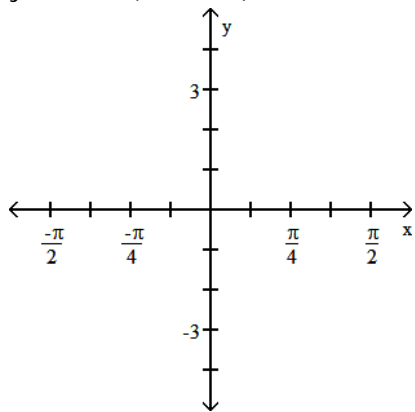
118) _____

Use a vertical shift to graph the function.

119) $y = 2 \sin \frac{1}{2}x - 2$
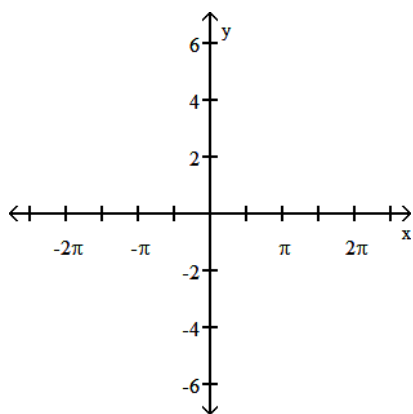
119) _____

120) $y = 2 \cos \left(2x - \frac{\pi}{2} \right) + 2$
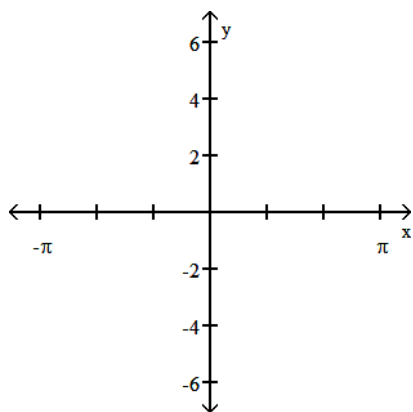
120) _____

Use a right triangle to write the expression as an algebraic expression. Assume that x is positive and in the domain of the given inverse trigonometric function.

121) $\sin(\tan^{-1} x)$

121) _____

16

122) $\cos(\tan^{-1} x)$

122) _____

123) $\cos(\sin^{-1} x)$

123) _____

124) $\sin(\sec^{-1} \frac{\sqrt{x^2 + 9}}{x})$

124) _____

Solve the system by the method of your choice. Identify systems with no solution and systems with infinitely many solutions, using set notation to express their solution sets.

125) $\begin{array}{l} 2x + y = 7 \\ 8x + 4y = 28 \end{array}$

125) _____

126) $\begin{array}{l} 4x - 3y = 6 \\ -12x + 9y = -24 \end{array}$

126) _____

127) $\begin{array}{l} y = 2x + 1 \\ 6x - 3y = -3 \end{array}$

127) _____

Solve the system of equations.

128) $\begin{array}{l} x + y + z = -5 \\ x - y + 3z = -15 \\ 3x + 3y + 3z = -9 \end{array}$

128) _____

129) $\begin{array}{l} 14 + 2z = 2(x - 3y) \\ 4(x - 3y - z) = 28 \\ 3(2x + y) + 4z = -22 \end{array}$

129) _____

Find the indicated sum.

130) Find the sum of the first 40 terms of the arithmetic sequence: -19, -23, -27, -31, . . .

130) _____

131) Find the sum of the odd integers between 152 and 58.

131) _____

Solve the problem.

132) A brick staircase has a total of 17 steps The bottom step requires 116 bricks. Each successive step requires 5 fewer bricks than the prior one. How many bricks are required to build the staircase?

132) _____

133) A new exhibit is scheduled to open at the local museum. Museum officials expect that 7000 people will visit the exhibit in its first week, and that the number of visitors will drop by 30 people per week after the first week during the first 6 months. Find the total number of visitors expected in the exhibit's first 7 weeks.

133) _____

134) A hockey player signs a contract with a starting salary of $810,000 per year and an annual increase of 6.5% beginning in the second year. What will the athlete's salary be, to the nearest dollar, in the eighth year?

134) _____

135) A pendulum bob swings through an arc 60 inches long on its first swing. Each swing thereafter, it swings only 89% as far as on the previous swing. What is the length of the arc after 12 swings? Round to two decimal places.

135) _____

Use the formula for the sum of the first n terms of a geometric sequence to solve.

136) Find the sum of the first 13 terms of the geometric sequence: $7, -14, 28, -56, 112, \ldots$.

136) _____

137) Find the sum of the first 11 terms of the geometric sequence: $\frac{1}{3}, -1, 3, -9, 27, \ldots$.

137) _____

Solve the problem.

138) As Sunee improves her algebra skills, she takes 0.9 times as long to complete each homework assignment as she took to complete the preceeding assignment. If it took her 50 minutes to complete her first assignment, find how long it took her to complete the fifth assignment. Find the total time she took to complete her first five homework assignments. (Round to the nearest minute.)

138) _____

Use the Binomial Theorem to expand the binomial and express the result in simplified form.

139) $(5x + 4)^4$

139) _____

140) $(5x - 5y)^3$

140) _____

141) $(2x - 1)^5$

141) _____

142) $(x^2 - 2y)^4$

142) _____

143) $(x + 3y)^6$

143) _____

Write the first three terms in the binomial expansion, expressing the result in simplified form.

144) $(x - 4)^{17}$

144) _____

145) $(2x + 3y)^7$

145) _____

Find the term indicated in the expansion.

146) $(2x - 3y)^{10}$; 4th term

146) _____

147) $(x + 2y)^{12}$; 10th term

147) _____

148) $(2x + 4)^5$; 5th term

148) _____

149) $(x^2 + y^4)^9$; 6th term

149) _____

Solve the problem.

150) In how many ways can 5 players be assigned to 5 positions on a baseball team, assuming that any player can play any position?

150) _____

151) A restaurant offers a choice of 5 salads, 6 main courses, and 2 desserts. How many possible 3-course meals are there?

151) _____

152) A student must choose 1 of 5 science electives, 1 of 5 social studies electives, and 1 of 7 language electives. How many possible course selections are there?

152) _____

153) How many 3-letter codes can be formed using the letters A, B, C, D, and E? No letter can be used more than once.

153) _____

154) How many 4-digit numbers can be formed using the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0? No digit can be used more than once.

154) _____

155) A combination lock has 20 numbers on it. How many different 3-digit lock combinations are possible if no digit can be repeated?

155) _____

156) A church has 9 bells in its bell tower. Before each church service 4 bells are rung in sequence. No bell is rung more than once. How many sequences are there?

156) _____

Does the problem involve permutations or combinations? Do not solve.

157) The matching section of an exam has 3 questions and 9 possible answers. In how many different ways can a student answer the 3 questions, if none of the answer choices can be repeated?

157) _____

158) A club elects a president, vice-president, and secretary-treasurer. How many sets of officers are possible if there are 15 members and any member can be elected to each position? No person can hold more than one office.

158) _____

Solve the problem.

159) A stack of 7 different cards are shuffled and spread out face down. If 4 cards are turned face up, how many different 4-card combinations are possible?

159) _____

160) From 8 names on a ballot, a committee of 3 will be elected to attend a political national convention. How many different committees are possible?

160) _____

161) Ron finds 9 books at a bookstore that he would like to buy, but he can afford only 5 of them. In how many ways can he make his selection? How many ways can he make his selection if he decides that one of the books is a must?

161) _____

Solve the problem. Round to the nearest hundredth of a percent if needed.

162) Use of the internet for shopping is increasing dramatically, but still is somewhat age dependent. When a popular web site that sells books asked the age of users who bought products from them over the internet, they obtained the following data. What is the probability that a buyer on this web site is aged 60-69?

162) _____

Age Group	Number
10-19	1962
20-29	3985
30-39	2829
40-49	635
50-59	443
60-69	308
70-79	72

163) Measurements of the height of a group of men entering a particular college produced the following table. What is the probability that a man entering the college is 68-69 inches tall?

163) _____

Height (inches)	60-61	62-63	64-65	66-67	68-69	70-71	72-73	74-75	76+
Number	5	11	80	247	290	155	110	35	3

164) The table below represents the number of deaths per 100 cases for an illness having a median mortality of four years and a right-skewed distribution over time. What is the probability of living more than 12 years after diagnosis of the disease?

164) _____

Years after Diagnosis	Number deaths
1-2	15
3-4	35
5-6	16
7-8	9
9-10	6
11-12	4
13-14	2
15+	13

Find the probability.

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

165) _____

166) Two 6-sided dice are rolled. What is the probability the sum of the two numbers on the die will be 6?

166) _____

167) Two 6-sided dice are rolled. What is the probability that the sum of the two numbers on the dice will be greater than 10?

167) _____

168) A lottery game contains 24 balls numbered 1 through 24. What is the probability of choosing a ball numbered 25?

168) _____

169) What is the probability that a card drawn from a deck of 52 cards is not a spade?

169) _____

170) A bag contains 26 marbles, of which 4 are blue and 6 are green. One marble is drawn from the bag. What is the probability that the marble drawn is not blue?

170) _____

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171) Give the probability that the roll of a die will show a number less than 6.　　171) _____

172) What is the probability that the arrow will land on an odd number?　　172) _____
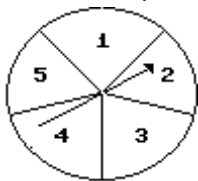
173) One digit from the number 3,151,221 is written on each of seven cards. What is the　　173) _____
probability of drawing a card that shows 3, 1, or 5?

174) A card is drawn from a deck of 52 cards. What is the probability that it is a numbered card　　174) _____
(2-10) or a spade?

175) Given the sequence 5, 6, 7, 8 ... 42, what is the probability that a number in the sequence is　　175) _____
odd or that it is greater than 12 and less then 27?

176) A 6-sided die is rolled. What is the probability of rolling a number that is even and a 3?　　176) _____

177) A card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a　　177) _____
red 2?

178) Urn A has balls numbered 1 through 7. Urn B has balls numbered 1 through 5. What is the　　178) _____
probability that a 4 is drawn from A followed by a 2 from B?

179) A game spinner has regions that are numbered 1 through 9. If the spinner is used twice,　　179) _____
what is the probability that the first number is a 3 and the second is a 6?

Find the derivative of f at x. That is, find f '(x).

180) $f(x) = x^2 - 8x - 11$; $x = 6$　　180) _____

181) $f(x) = \sqrt{x}$; $x = 100$　　181) _____

182) $f(x) = \dfrac{-4}{x}$; $x = 4$　　182) _____

Solve the problem.

183) The function $f(x) = x^3$ describes the volume of a cube, $f(x)$, in cubic inches, whose length,　　183) _____
width, and height each measure x inches. If x is changing, find the average rate of change
of the volume with respect to x as x changes from 1 inches to 1.1 inches.

184) A foul tip of a baseball is hit straight upward from a height of 4 feet with an initial velocity　　184) _____
of 96 feet per second. The function $s(t) = -16t^2 + 96t$ describes the ball's height above the
ground, $s(t)$, in feet, t seconds after it was hit. What is the instantaneous velocity of the ball
2.1 seconds after it was hit?

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Complete the identity.

185) $\sec x - \dfrac{1}{\sec x} = ?$ 185) _____

186) $\csc x(\sin x + \cos x) = ?$ 186) _____

187) $\dfrac{(\sin x + \cos x)^2}{1 + 2\sin x \cos x} = ?$ 187) _____

188) $2\tan x - (1 + \tan x)^2 = ?$ 188) _____

189) $\tan x(\cot x - \cos x) = ?$ 189) _____

190) $\sin^2 x + \sin^2 x \cot^2 x = ?$ 190) _____

191) $\sin^2 x + \tan^2 x + \cot^2 x = ?$ 191) _____

192) $\dfrac{\csc x \cot x}{\sec x} = ?$ 192) _____

193) $\sec^4 x + \sec^2 x \tan^2 x - 2\tan^4 x = ?$ 193) _____

194) $\tan x \cdot \cot x = ?$ 194) _____

195) $\dfrac{(\tan x + 1)(\tan x + 1) - \sec^2 x}{\tan x} = ?$ 195) _____

196) $\dfrac{\cos x - \sin x}{\cos x} + \dfrac{\sin x - \cos x}{\sin x} = ?$ 196) _____

197) $\dfrac{\cos^2 x - \sin^2 x}{1 - \tan^2 x} = ?$ 197) _____

198) $\dfrac{\sin x + \cos x}{\sin x} - \dfrac{\cos x - \sin x}{\cos x} = ?$ 198) _____

199) $\sin^4 x - \cos^4 x = ?$ 199) _____

200) $\dfrac{(\csc x + 1)(\csc x - 1)}{\cot^2 x} = ?$ 200) _____

201) $\cot^2 2x + \cos^2 2x + \sin^2 2x = ?$ 201) _____

202) $1 - \dfrac{\sin^2 x}{1 + \cos x} = ?$

202) _____

203) $\csc^2 x \sec x = ?$

203) _____

Verify the identity.

204) $\cot \theta \cdot \sec \theta = \csc \theta$

204) _____

205) $\tan \theta \cdot \csc \theta = \sec \theta$

205) _____

206) $\csc^2 u - \cos u \sec u = \cot^2 u$

206) _____

207) $(1 + \tan^2 u)(1 - \sin^2 u) = 1$

207) _____

208) $\csc u - \sin u = \cos u \cot u$

208) _____

209) $1 + \sec^2 x \sin^2 x = \sec^2 x$

209) _____

210) $\cot^2 x + \csc^2 x = 2 \csc^2 x - 1$

210) _____