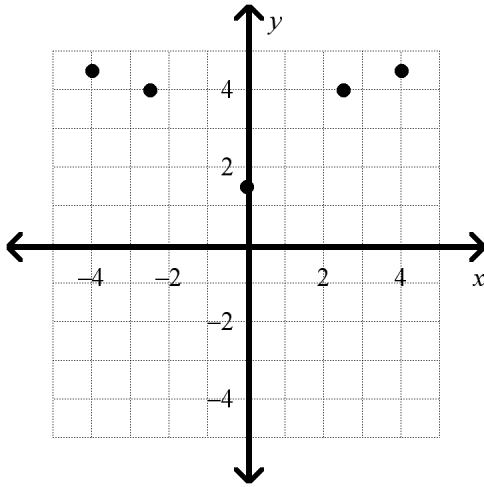
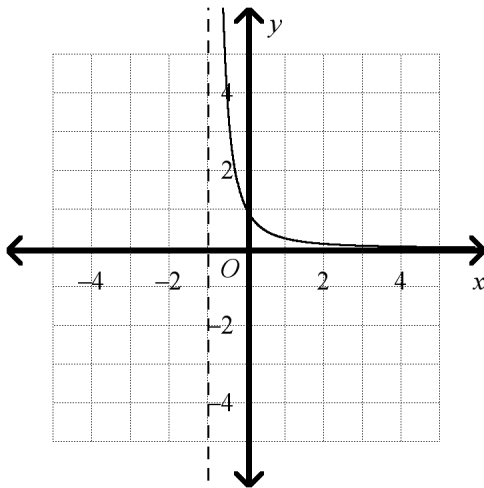


Algebra 2, Fall Semester Exam Review

1. Find the domain and range of the relation.



2. Find the domain and range of the relation and determine whether it is a function.



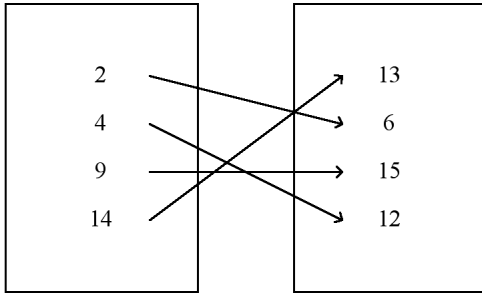
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Is the relation a function?

_____ 3. $\{(14, 15), (5, 7), (3, 10), (11, 1), (5, 8)\}$

- a. yes
- b. no

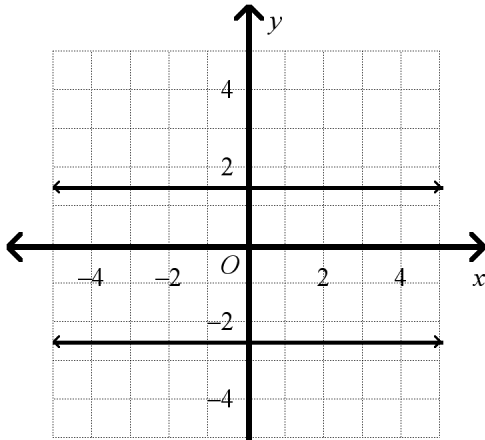
_____ 4.



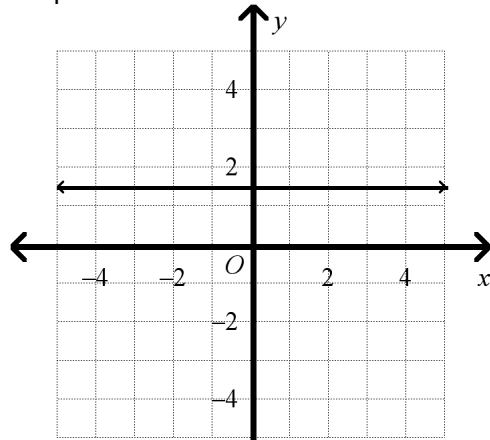
- a. yes
- b. no

_____ 5. Use the vertical-line test to determine which graph represents a function.

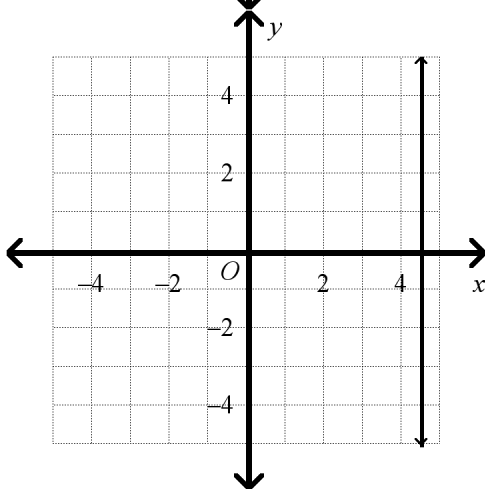
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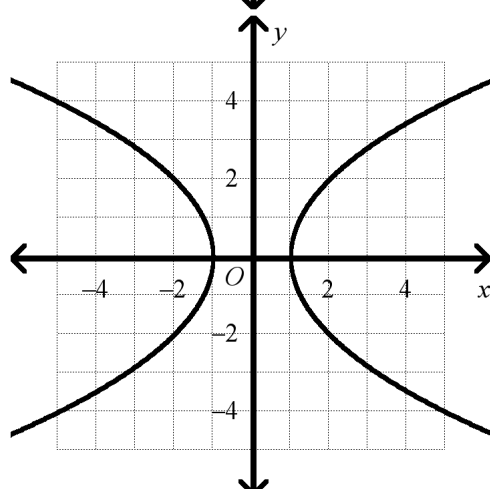
c.



b.



d.



For each function, what is the output of the given input?

6. For $f(x) = 5x + 1$, find $f(-4)$.

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7. For $f(x) = -5x + 1$, find $f(3)$.

_____ 8. Specialty t-shirts are being sold online for \$35 plus a one-time handling fee of \$1.75. The total cost is a function of the number of t-shirts bought. What function rule models the cost of the t-shirts? Evaluate the function for 6 t-shirts.

a. $1.75t + 35$; \$211.75

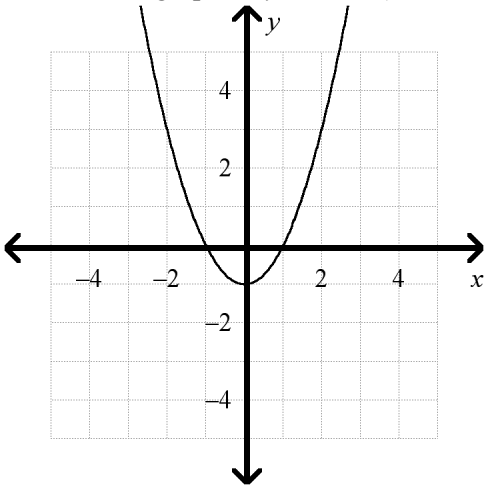
c. $1.75t + 35$; \$45.5

b. $35t + 1.75$; \$211.75

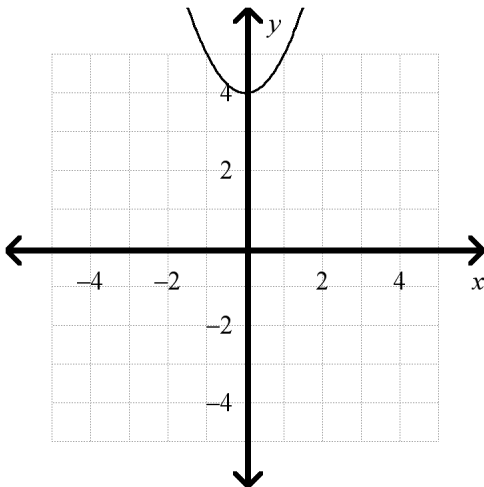
d. $35t + 1.75$; \$45.5

9. A candle is 16 in. tall after burning for 3 hours. After 5 hours, it is 15.5 in. tall. Write a linear equation to model the relationship between height h of the candle and time t . Predict how tall the candle will be after burning 2 hours.

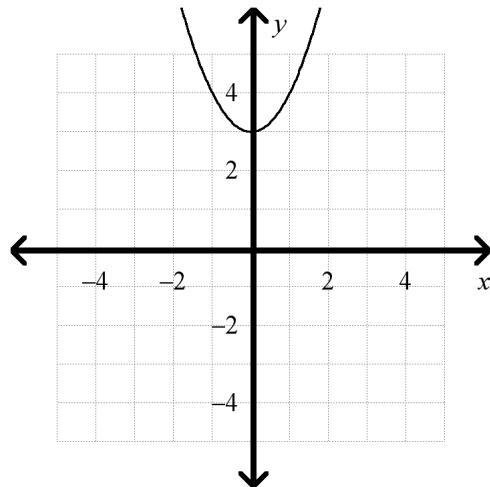
_____ 10. What is the graph of $y = x - 1$ (shown below) translated up 4 units?



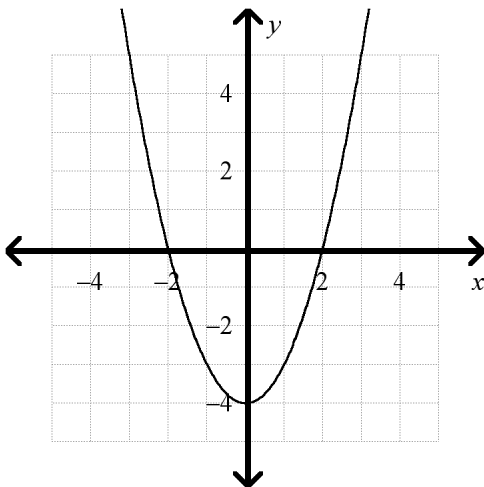
a.



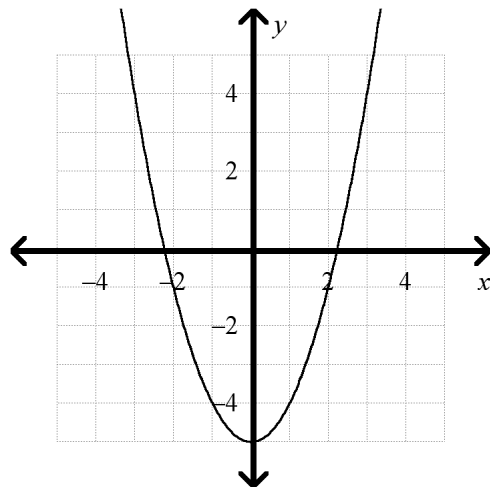
c.



b.



d.



22. $x^2 - 6x + 8$

23. $-x^2 - x + 42$

What is the expression in factored form?

24. $16x^2 + 8x$

25. $2x^2 + 16x + 30$

26. $-4x^2 + 16x + 48$

27. $3x^2 + 26x + 35$

28. $9x^2 - 18x + 9$

29. $16x^2 - 25$

What are the solutions of the quadratic equation?

30. $x^2 + 11x = -28$

31. $x^2 - 12x + 32 = 0$

32. $3x^2 + 25x + 42 = 0$

33. $4x^2 - 18x + 20 = 0$

What is the solution of each equation?

34. $3x^2 = 21$

35. $108x^2 = 147$

Use the Quadratic Formula to solve the equation.

36. $-x^2 + 6x - 5 = 0$

37. $-2x^2 - 5x + 5 = 0$

38. $2x^2 + x - 4 = 0$

39. $-4x^2 + x = -4$

What is the number of real solutions?

_____ 40. $-x^2 + 9x + 7 = 0$

- a. one solution
b. no real solutions
c. two solutions
d. cannot be determined

_____ 41. $8x^2 - 11x = -3$

- a. one real solution
b. two real solutions
c. no real solutions
d. cannot be determined

_____ 42. $x^2 = -7x + 7$

- a. one solution
b. no real solutions
c. two solutions
d. cannot be determined

_____ 43. $-4x^2 - 4 = 8x$

- a. one solution
b. two solutions
c. no real solutions
d. cannot be determined

Simplify the number using the imaginary unit i .

44. $\sqrt{-144}$

45. $\sqrt{-360}$

Simplify the expression.

46. $(-1 + 6i) + (-4 + 2i)$

47. $(2 - 5i) - (3 + 4i)$

48. $(-5i)(6i)$

49. $(6 - 4i)(-1 + 6i)$

50. $\frac{-1 + 3i}{4 - i}$

51. $\frac{2-5i}{6i}$

What are the solutions?

52. $9x^2 + 16 = 0$

53.

$\frac{1}{2}x^2 - x + 5 = 0$

54. Classify $-6x^5 + 4x^3 + 3x^2 + 11$ by degree.55. Classify $8x^4 + 7x^3 + 5x^2 + 8$ by number of terms.56. Write $-2x^2(-5x^2 + 4x^3)$ in standard form.

Consider the leading term of each polynomial function. What is the end behavior of the graph?

_____ 57. $2x^3 + 5x$

- The leading term is $2x^3$. Since n is odd and a is positive, the end behavior is up and up.
- The leading term is $2x^3$. Since n is odd and a is positive, the end behavior is up and down.
- The leading term is $2x^3$. Since n is odd and a is positive, the end behavior is down and down.
- The leading term is $2x^3$. Since n is odd and a is positive, the end behavior is down and up.

_____ 58. $5x^8 - 2x^7 - 8x^6 + 1$

- The leading term is $5x^8$. Since n is even and a is positive, the end behavior is down and up.
- The leading term is $5x^8$. Since n is even and a is positive, the end behavior is up and down.
- The leading term is $5x^8$. Since n is even and a is positive, the end behavior is up and up.
- The leading term is $5x^8$. Since n is even and a is positive, the end behavior is down and down.

Write the polynomial in factored form.

59. $4x^3 + 8x^2 - 96x$

60. $x^3 + 9x^2 + 18x$

What are the zeros of the function? Graph the function.

61. $y = x(x - 2)(x + 5)$

62. $y = (x + 3)(x - 3)(x - 4)$

_____ 63. What is a cubic polynomial function in standard form with zeros 5, 2, and -5 ?

a. $f(x) = x^3 + 2x^2 + 25x + 50$

c. $f(x) = x^3 - 2x^2 - 25x + 50$

b. $f(x) = x^3 + 2x^2 - 25x + 10$

d. $f(x) = x^3 + 2x^2 + 17x + 50$

_____ 64. What is a quadratic polynomial function in standard form with zeros -3 , -4 , 1 , and 3 ?

a. $g(x) = x^4 + 3x^3 - 13x^2 - 27x + 36$

c. $g(x) = x^4 + 3x^3 - x^2 - 6x + 36$

b. $g(x) = x^4 - 3x^3 + 13x^2 + 27x + 36$

d. $g(x) = x^4 - 3x^3 - x^2 + 27x + 36$

What are the zeros of the function? What are their multiplicities?

_____ 65. $f(x) = x^4 - 4x^3 + 3x^2$

a. the numbers -1 and -3 are zeros of multiplicity 2; the number 0 is a zero of multiplicity 1

b. the number 0 is a zero of multiplicity 2; the numbers 1 and 3 are zeros of multiplicity 1

c. the numbers 0 and 1 are zeros of multiplicity 2; the number 3 is a zero of multiplicity 1

d. the number 0 is a zero of multiplicity 2; the numbers -1 and -3 are zeros of multiplicity 1

_____ 66. $f(x) = 4x^3 - 12x^2 - 16x$

a. the numbers 1 , -4 , and 0 are zeros of multiplicity 2

b. the numbers -1 , 4 , and 0 are zeros of multiplicity 2

c. the numbers -1 , 4 , and 0 are zeros of multiplicity 1

d. the numbers 1 , -4 , and 0 are zeros of multiplicity 1

What is the relative maximum and minimum of the function?

67. $f(x) = x^3 + 6x^2 - 36x$

68. $f(x) = 2x^3 + x^2 - 11x$

What are the real or imaginary solutions of each polynomial equation?

69. $x^4 - 40x^2 + 144 = 0$

What are the real or imaginary solutions of the polynomial equation?

70. $x^4 - 20x^2 + 64 = 0$

71. Divide $4x^3 + 2x^2 + 3x + 4$ by $x + 4$.

72. Divide $-3x^3 - 2x^2 - x - 2$ by $x - 2$.

73. Divide $x^3 + x^2 - x + 2$ by $x + 4$.

_____ 74. Determine which binomial is *not* a factor of $4x^4 - 21x^3 - 46x^2 + 219x + 180$.

a. $x + 4$

c. $x - 5$

b. $x + 3$

d. $4x + 3$

_____ 75. Is $(x - 2)$ a factor of $P(x) = x^3 + 2x^2 - 6x - 4$? If it is, write $P(x)$ as a product of two factors.

a. yes:

$P(x) = (x + 2)(x^2 + 4x + 2)$

c. yes:

$P(x) = (x - 2)(x^2 - 4x + 2)$

b. yes:

$P(x) = (x - 2)(x^2 + 4x + 2)$

d. $(x - 2)$ is not a factor of $P(x)$

Find all the zeros of the equation.

76. $x^5 - 3x^4 - 24x^3 - 72x^2 - 25x + 75 = 0$

77. $-3x^5 + 3x^4 + 9x^3 - 7x^2 + 12x = 12$

78. $x^3 - x^2 - 13x - 13 = 0$

79. $7x^2 - 144 = -x^4$

What is the simplified form of each expression?

80. $(-5.1)^0$

81. $-(10)^{-1}$

What is the simplified form of each expression?

82. $4c^{-1} \cdot 3c^{10}$

83. $(-2x^8) \cdot 3y^9 \cdot 2x^4$

What is the simplified form of the expression?

84. $(m^7)^2$

85. $(y^{-5})^{-10} y^{10}$

What is the simplified form of each expression?

86. $(3q^2)^4$

87. Find all the real square roots of 0.0004.

88. Find all the real cube roots of 0.000027.

Find the real-number root.

89. $\sqrt{1.69}$

90. $\sqrt{-2.56}$

What is a simpler form of the radical expression?

91. $\sqrt{36g^6}$

92. $\sqrt[4]{81x^{20}y^8}$

93. $\sqrt[3]{27x^{15}y^{24}}$

Multiply and simplify if possible.

94. $\sqrt{6} \cdot \sqrt{2}$

95. $\sqrt[4]{11} \cdot \sqrt[4]{3}$

96. $\sqrt{7x}(\sqrt{x} - 7\sqrt{7})$

What is the simplest form of the expression?

97. $\sqrt[3]{128a^{13}b^6}$

98. $\sqrt[3]{108a^{16}b^9}$

What is the simplest form of the product?

99. $\sqrt[3]{7x^7} \cdot \sqrt[3]{9x^4}$

100. $\sqrt{50x^7y^7} \cdot \sqrt{6xy^4}$

What is the simplest form of the quotient?

101. $\frac{\sqrt[3]{162}}{\sqrt[3]{2}}$

102. $\frac{\sqrt[4]{400}}{\sqrt[4]{5}}$

103. $\frac{\sqrt[3]{270x^{20}}}{\sqrt[3]{5x}}$

104. $\frac{\sqrt{6x^8y^9}}{\sqrt{5x^2y^4}}$

What is the simplest form of the radical expression?

105. $2\sqrt[4]{2x} + 6\sqrt[4]{2x}$

106. $4\sqrt[3]{3x} + 5\sqrt[3]{10x}$

107. $3\sqrt{2a} - 6\sqrt{2a}$

What is the simplest form of the expression?

____ 108. $\sqrt{20} + \sqrt{45} - \sqrt{5}$

a. $4\sqrt{5}$

c. $13\sqrt{5}$

b. $6\sqrt{5}$

d. $5\sqrt{5}$

____ 109. $\sqrt[3]{48} + \sqrt[3]{2058} - \sqrt[3]{750}$

a. $4\sqrt[3]{6}$

c. $2.8\sqrt[3]{6}$

b. $14\sqrt[3]{6}$

d. $9\sqrt[3]{6}$

What is the product of the radical expression?

110. $(7 - \sqrt{2})(8 + \sqrt{2})$

111. $(-5 - \sqrt{3})^2$

How can you write the expression with rationalized denominator?

112.

$$\frac{\sqrt{3} - \sqrt{6}}{\sqrt{3} + \sqrt{6}}$$

113.

$$\frac{2 + \sqrt[3]{3}}{\sqrt[3]{6}}$$

Simplify.

114. $20^{\frac{1}{2}} \cdot 20^{\frac{1}{2}}$

115. $3^{\frac{1}{3}} \cdot 9^{\frac{1}{3}}$

____ 116. $16^{\frac{1}{2}}$

a. 16^2

c. $\sqrt{16^2}$

b. 4

d. 16

117. Write the exponential expression $3x^{\frac{3}{8}}$ in radical form.

118.

Write the radical expression $\frac{8}{\sqrt[7]{x^{15}}}$ in exponential form.

_____ 119. What is $\frac{\sqrt[3]{x^3}}{\sqrt[5]{x^2}}$ in simplest form?

a. $x^{\frac{3}{5}}$

c. $x^{\frac{9}{15}}$

b. $x^{\frac{5}{3}}$

d. $x^{\frac{15}{9}}$

What is the simplest form of the number?

_____ 120. $\sqrt{2}(\sqrt[8]{2})$

a. 1024

c. $2^{\frac{8}{5}}$

b. $2^{\frac{5}{8}}$

d. $2^{\frac{1}{10}}$

_____ 121. $-27^{\frac{2}{3}}$

a. 9

c. -28

b. 57

d. -18

What is the solution of the equation?

122. $\sqrt{x+10} - 7 = -5$

123. $-10 + \sqrt{x+8} = -4$

124. $(x+6)^{\frac{3}{5}} = 8$

125. $\sqrt{3x+28} - 8 = x$

Graph the equation.

126. $y = \sqrt{x} - 3$

127. $y = \sqrt{x + 3}$

128. $y = -0.5\sqrt{x - 2} + 2$

129. $y = \sqrt[3]{x - 1} + 1$

To which set of numbers does the number belong?

130. $\sqrt{51}$

131. -55

132. $-\frac{2}{15}$

Which algebraic expression models the given word phrase?

_____ 133. 40 fewer than a number t

- a. $-40t$
b. $t + 40$

- c. $40 - t$
d. $t - 40$

_____ 134. 5 times the sum of a and b

- a. $5a + b$
b. $5(a + b)$

- c. $a + b$
d. $5(a - b)$

Evaluate the expression for the given value of the variable(s).

135. $5a + 5b; a = -6, b = -5$

136. $|4b - 4| + |3 - b^2| + 2b^3; b = 2$

Solve the equation.

137. $3y + 20 = 3 + 2y$

138. $-5y - 9 = -(y - 1)$

Is the following *always, sometimes, or never* true?

139. $14 + 3x - 7 = 7x + 7 - 4x$

140. $8 + 6x - 10 = 10x + 11 - 4x$

Solve the equation or formula for the indicated variable.

141. $S = 5r^2t$, for t

142. $T = \frac{4U}{E}$, for U

Solve the absolute value equation. Graph the solution.

143. $|x - 3| = 1$

144. $2|4x - 5| - 2 = -4$

145. $|4x + 1| = -3$

146. $4|3x + 5| + 2 = 10$

Solve the equation. Check for extraneous solutions.

147. $4|4 - 5x| = 6x + 4$

148. $4|5 - 6x| = 3x + 4$;

Solve the inequality. Graph the solution.

149. $|2x + 3| \geq 19$

150. $|2x + 10| \leq 26$

151. $2\left|x + \frac{1}{4}\right| < 9$

152. $|4x + 8| > 28$

What is the slope of the line that passes through the given points?

_____ 153. (2, 7) and (1, 3)

a. 4

c. -4

b. $\frac{1}{4}$

d. $-\frac{1}{4}$

_____ 154. (-12, 12) and (2, 4)

a. $-\frac{4}{7}$

c. $\frac{4}{7}$

b. $-\frac{7}{4}$

d. $\frac{7}{4}$

_____ 155. (7, -9) and (7, -1)

a. undefined

c. $-\frac{5}{7}$

b. 0

d. $-\frac{7}{5}$

What is an equation of the line in slope intercept form?

_____ 156. $m = \frac{1}{2}$ and the y -intercept is (0, -2)

a. $y = -2x + \frac{1}{2}$

c. $y = \frac{1}{2}x - 2$

b. $y = \frac{1}{2}x + 2$

d. $y = 2x - \frac{1}{2}$

Write the equation in slope-intercept form. What are the slope and y -intercept?

_____ 157. $-8x + 3y = -10$

a. $y = \frac{8}{3}x + \frac{10}{3}$;

c. $y = -\frac{8}{3}x - \frac{10}{3}$;

slope: $\frac{10}{3}$; y -intercept: $\frac{8}{3}$

slope: $\frac{8}{3}$; y -intercept: $\frac{10}{3}$

b. $y = \frac{8}{3}x - \frac{10}{3}$;

d. $y = -\frac{8}{3}x + \frac{10}{3}$

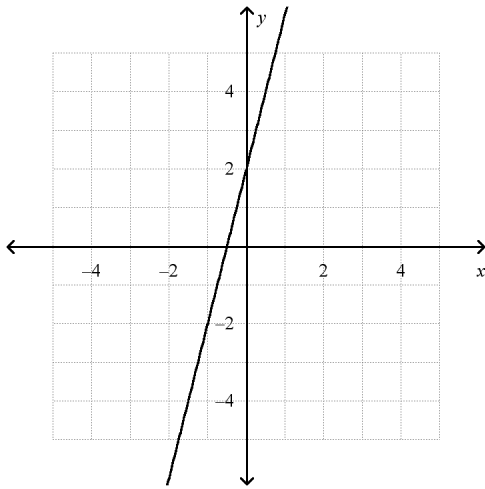
slope: $\frac{8}{3}$; y -intercept: $-\frac{10}{3}$

slope: $\frac{8}{3}$; y -intercept: $\frac{10}{3}$

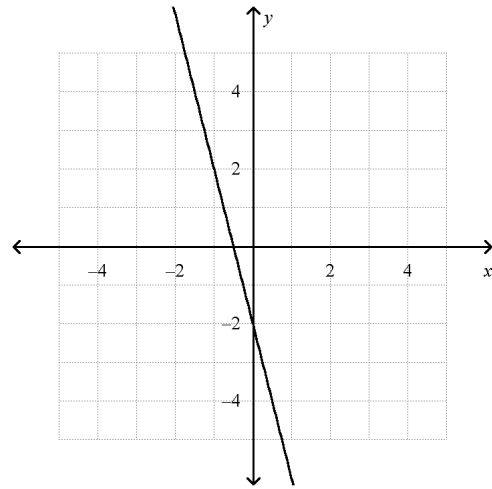
What is the graph of the equation?

_____ 158. $-4x + y = -2$

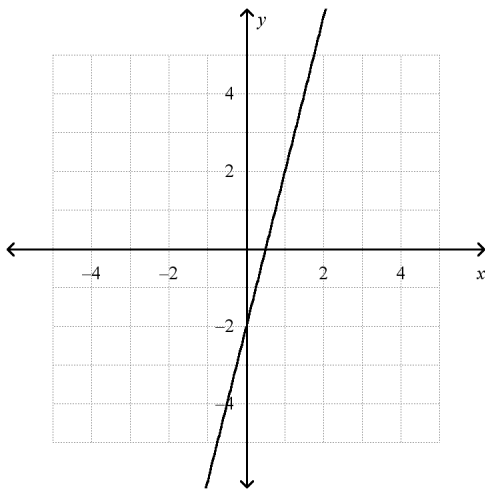
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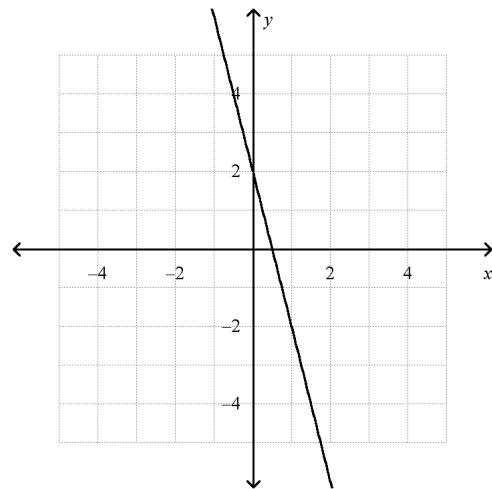
c.



b.

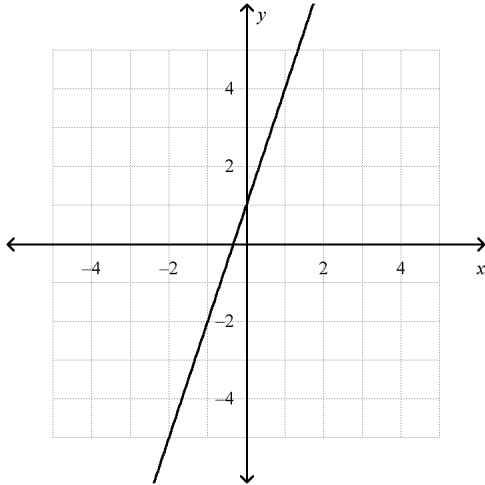


d.

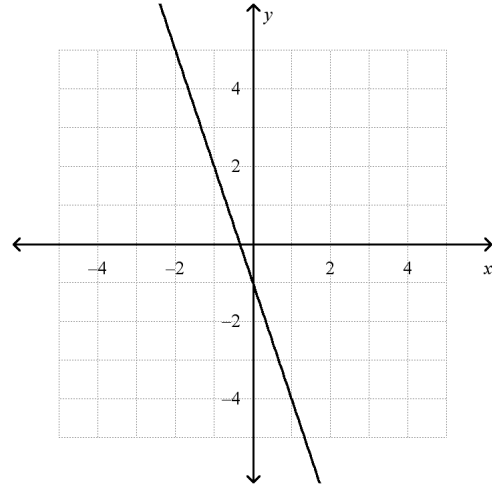


____ 159. $3x - y = 1$

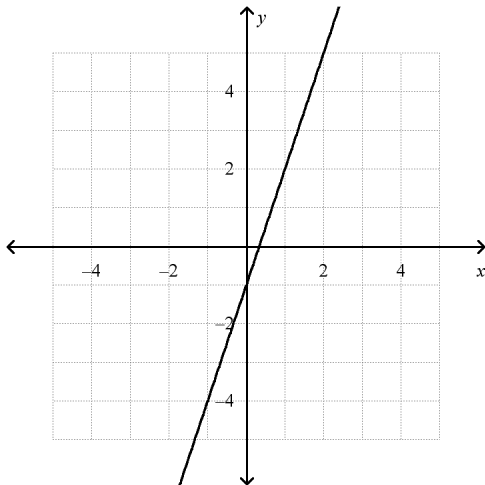
a.



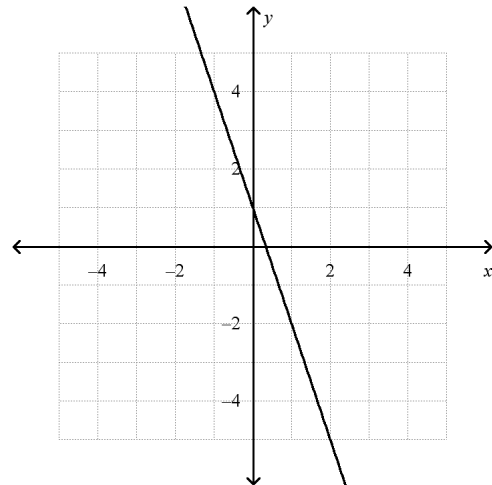
c.



b.



d.



Write an equation of the line, in point-slope form, that passes through the two given points.

____ 160. points: $(-10, 18)$, $(6, -14)$

a. $y - 18 = -2(x + 10)$

c. $y - 10 = -\frac{1}{2}(x + 18)$

b. $y - 10 = -2(x - 18)$

d. $y - 18 = -\frac{1}{2}(x + 10)$

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What is an equation of the line, in point-slope form, that passes through the given point and has the given slope?

_____ 161. point: $(8, -3)$; slope: 8

a. $y - 3 = 8(x + 8)$

c. $y - 3 = 8(x - 8)$

b. $y + 3 = 8(x - 8)$

d. $y + 3 = 8(x + 8)$

What is the equation of the given line in standard form? Use integer coefficients.

_____ 162. $y = \frac{5}{8}x - 9$

a. $5x + 8y = -72$

c. $-5x - 8y = -72$

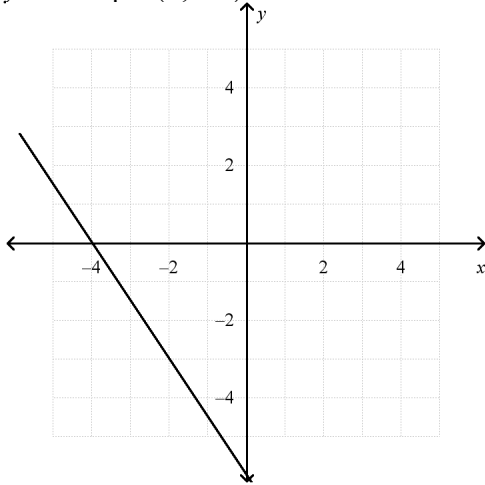
b. $-5x + 8y = -9$

d. $-5x + 8y = -72$

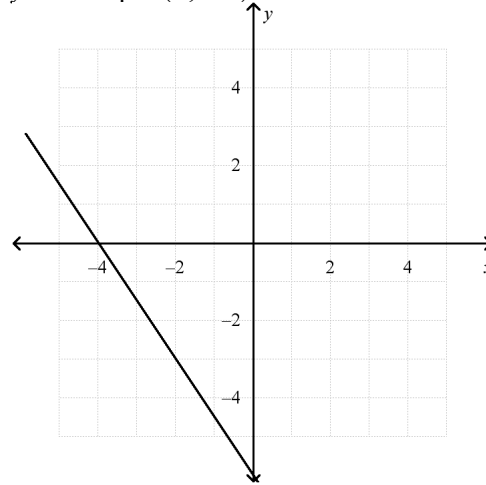
What are the intercepts of the equation? Graph the equation.

_____ 163. $-4x - 6y = 24$

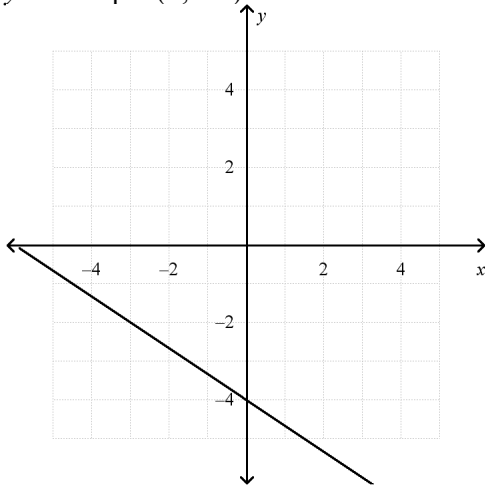
- a. x -intercept: $(-4, 0)$
 y -intercept: $(0, -6)$



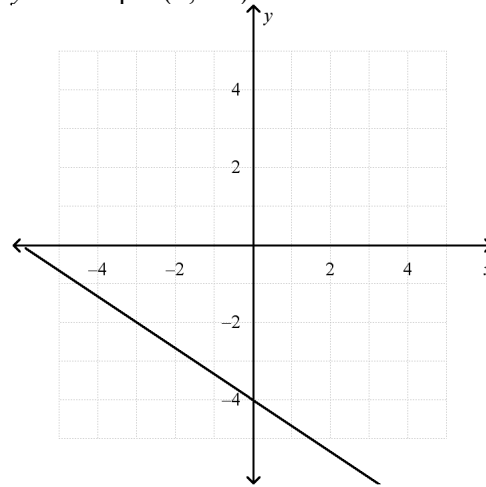
- c. x -intercept: $(-6, 0)$
 y -intercept: $(0, -4)$



- b. x -intercept: $(-4, 0)$
 y -intercept: $(0, -6)$

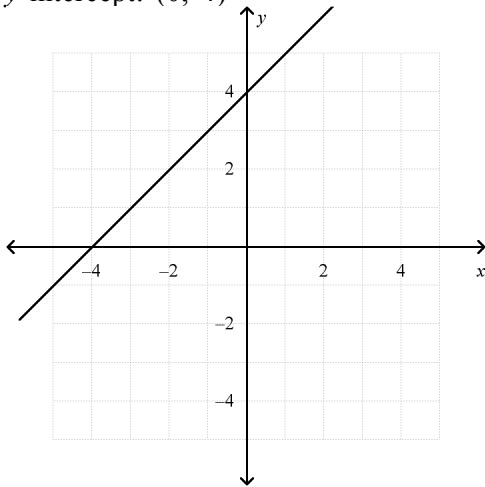


- d. x -intercept: $(-6, 0)$
 y -intercept: $(0, -4)$

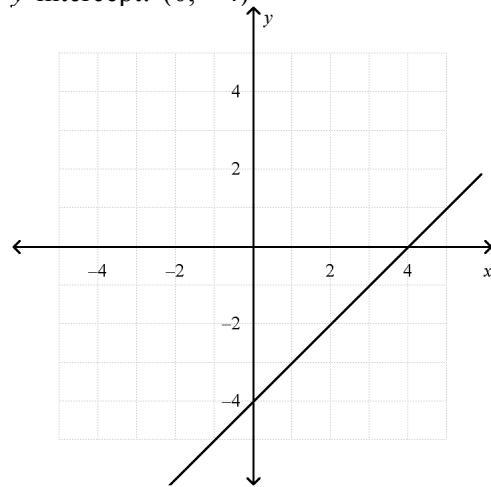


____ 164. $-2x + 2y = -8$

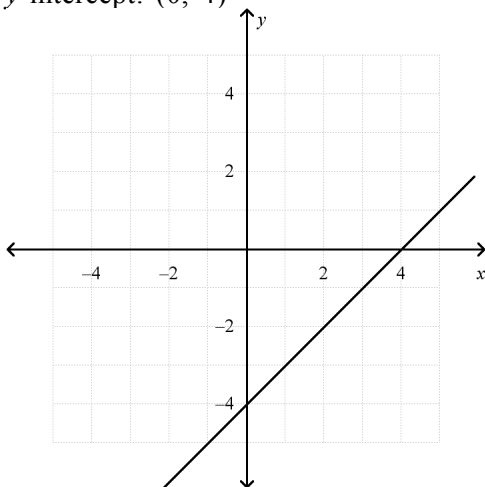
- a. x -intercept: $(-4, 0)$
 y -intercept: $(0, 4)$



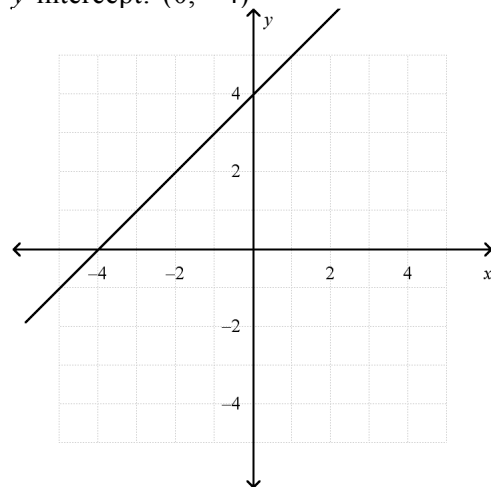
- c. x -intercept: $(4, 0)$
 y -intercept: $(0, -4)$



- b. x -intercept: $(-4, 0)$
 y -intercept: $(0, -4)$



- d. x -intercept: $(4, 0)$
 y -intercept: $(0, 4)$



What is the graph of the function?

165. $f(x) = 3x^2$

Graph each function. How is each graph a translation of $f(x) = x^2$?

166. $y = (x - 3)^2$

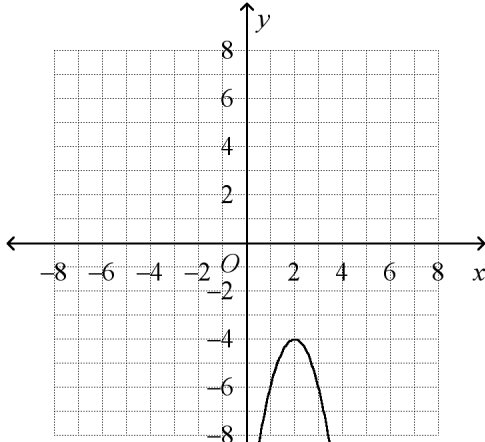
167. $y = (x + 3)^2 + 4$

168. Identify the vertex and the axis of symmetry of the graph of the function $y = 2(x + 2)^2 - 4$.

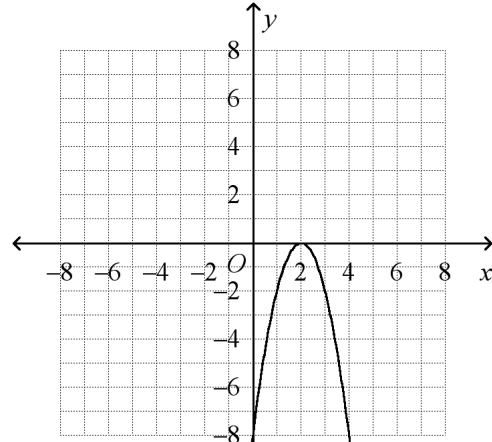
169. Identify the maximum or minimum value and the domain and range of the graph of the function $y = 2(x + 2)^2 - 3$.

_____ 170. Which is the graph of $y = -2(x - 2)^2 - 4$?

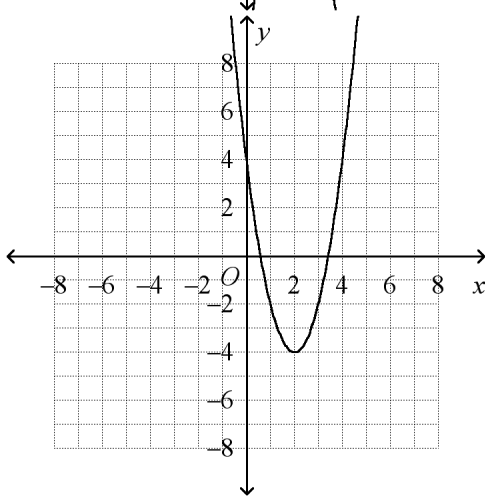
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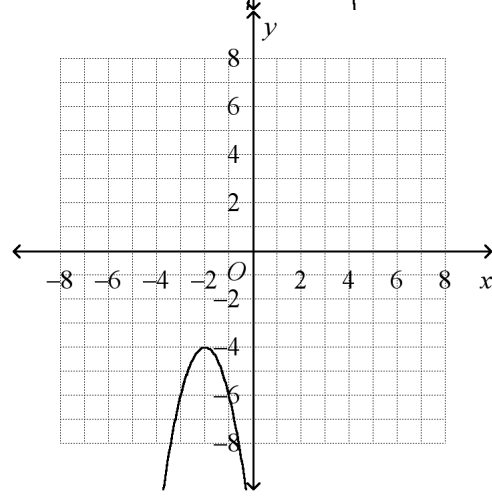
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b.

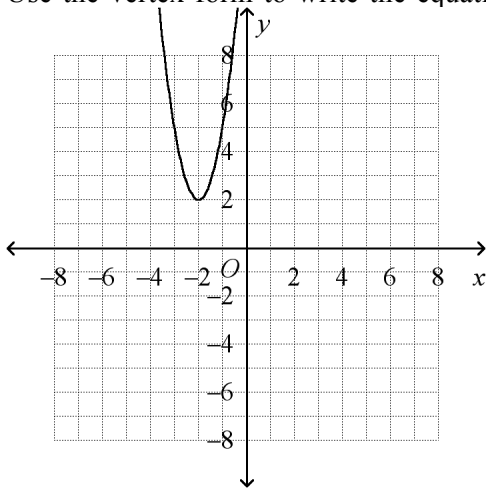


d.



171. What steps transform the graph of $y = x^2$ to $y = -(x + 3)^2 + 5$?

172. Use the vertex form to write the equation of the parabola.



173. Suppose a parabola has vertex $(-8, -7)$ and also passes through the point $(-7, -4)$. Write the equation of the parabola in vertex form.

What are the vertex and the axis of symmetry of the equation?

174. $y = 2x^2 + 4x - 10$

175. $y = -2x^2 + 16x - 16$

What is the graph of the equation?

176. $y = -x^2 + 2x + 3$

What is the vertex form of the equation?

177. $y = x^2 - 2x + 8$

178. $y = x^2 + 8x - 6$

- _____ 179. A biologist took a count of the number of migrating waterfowl at a particular lake, and recounted the lake's population of waterfowl on each of the next six weeks.

Week	0	1	2	3	4	5	6
Population	585	582	629	726	873	1,070	1,317

Find a quadratic function that models the data as a function of x , the number of weeks. Use the model to estimate the number of waterfowl at the lake on week 8.

- a. $P(x) = 25x^2 - 28x + 585$; 1,614 waterfowl
- b. $P(x) = 30x^2 + 28x + 535$; 2,679 waterfowl
- c. $P(x) = 25x^2 - 28x + 585$; 1,961 waterfowl
- d. $P(x) = 30x^2 + 28x + 535$; 2,201 waterfowl

Algebra 2, Fall Semester Exam Review Answer Section

1. ANS:
domain: $\{-4, -2.5, 0, 2.5, 4\}$; range: $\{4.5, 4, 1.5\}$
- PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.1 To graph relations NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 1 Representing a Relation
KEY: domain | range | relation DOK: DOK 1
2. ANS:
domain: $x > -1$; range: $y > 0$; Yes, it is a function.
- PTS: 1 DIF: L3 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 2 Finding Domain and Range
KEY: domain | range | relation | function DOK: DOK 2
3. ANS: B PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 3 Identifying Functions
KEY: function | relation DOK: DOK 1
4. ANS: A PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 3 Identifying Functions
KEY: function | relation DOK: DOK 1
5. ANS: C PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 4 Using the Vertical-Line Test
KEY: graphing | vertical-line test | function DOK: DOK 1
6. ANS:
-19
- PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 5 Using Function Notation
KEY: function notation DOK: DOK 1
7. ANS:
-14
- PTS: 1 DIF: L2 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 5 Using Function Notation
KEY: function notation DOK: DOK 1
8. ANS: B PTS: 1 DIF: L3 REF: 2-1 Relations and Functions
OBJ: 2-1.2 To identify functions NAT: A.1.g| A.1.i| A.2.b| A.3.f
STA: L1.2.1| A2.1.1| A2.1.2| A2.1.3 TOP: 2-1 Problem 6 Writing and Evaluating a Function
KEY: function rule DOK: DOK 2

9. ANS:

$$h(t) = -0.25t + 16.75; 16.25 \text{ inches}$$

PTS: 1 DIF: L3 REF: 2-5 Using Linear Models
 OBJ: 2-5.2 To make predictions from linear models NAT: A.2.e| D.1.c| D.2.e| D.2.f| D.5.d
 STA: A2.4.3 TOP: 2-5 Problem 2 Writing the Equation of a Trend Line
 DOK: DOK 3

10. ANS: C PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 1 Vertical Translation KEY: translation
 DOK: DOK 2

11. ANS: A PTS: 1 DIF: L2 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 2 Horizontal Translation KEY: translation | transformation
 DOK: DOK 2

12. ANS:

$$g(x) = -6x + 9$$

PTS: 1 DIF: L2 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 3 Reflecting a Function Algebraically KEY: transformation
 DOK: DOK 2

13. ANS:

$$g(x) = -x^2 - 5$$

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 3 Reflecting a Function Algebraically KEY: transformation
 DOK: DOK 2

14. ANS:

$$y = 4x$$

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 4 Stretching and Compressing a Function KEY: transformation
 DOK: DOK 3

15. ANS:

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

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 5 Combining Transformations KEY: transformation
 DOK: DOK 2

16. ANS:

$$g(x) = (x + 5)^2 + 3$$

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 5 Combining Transformations KEY: transformation
 DOK: DOK 2

17. ANS:

The graph of $g(x)$ is the graph of $f(x)$ stretched vertically by a factor of 5 and translated up 5 units.

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 5 Combining Transformations KEY: transformation
 DOK: DOK 2

18. ANS:

The graph of $g(x)$ is the graph of $f(x)$ translated to the right 9 units and down 6 units.

PTS: 1 DIF: L3 REF: 2-6 Families of Functions
 OBJ: 2-6.1 To analyze transformations of functions NAT: G.2.c| G.4.d| A.1.e| A.1.h| A.2.b
 STA: A2.4.1| A2.1.7| A2.4.2| A2.3.1| A2.3.3
 TOP: 2-6 Problem 5 Combining Transformations KEY: transformation
 DOK: DOK 2

19. ANS:

minimum value: -9
 range: $y \geq -9$

PTS: 1 DIF: L2 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 1 Finding the Features of a Quadratic Function
 KEY: standard form DOK: DOK 2

20. ANS:
maximum: 24
range: $y \leq 24$
- PTS: 1 DIF: L3 REF: 4-2 Standard Form of a Quadratic Function
OBJ: 4-2.1 To graph quadratic functions written in standard form
STA: A2.1.3 TOP: 4-2 Problem 1 Finding the Features of a Quadratic Function
KEY: standard form DOK: DOK 2
21. ANS:
 $(x + 6)(x + 8)$
- PTS: 1 DIF: L2 REF: 4-4 Factoring Quadratic Expressions
OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
NAT: N.5.c| A.2.a TOP: 4-4 Problem 1 Factoring ax^2+bx+c when $a=\pm 1$
KEY: factor a quadratic expression | quadratic expression DOK: DOK 2
22. ANS:
 $(x - 2)(x - 4)$
- PTS: 1 DIF: L2 REF: 4-4 Factoring Quadratic Expressions
OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
NAT: N.5.c| A.2.a TOP: 4-4 Problem 1 Factoring ax^2+bx+c when $a=\pm 1$
KEY: factor a quadratic expression | quadratic expression DOK: DOK 2
23. ANS:
 $-(x - 6)(x + 7)$
- PTS: 1 DIF: L3 REF: 4-4 Factoring Quadratic Expressions
OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
NAT: N.5.c| A.2.a TOP: 4-4 Problem 1 Factoring ax^2+bx+c when $a=\pm 1$
KEY: factor a quadratic expression | quadratic expression DOK: DOK 2
24. ANS:
 $4x(4x + 2)$
- PTS: 1 DIF: L2 REF: 4-4 Factoring Quadratic Expressions
OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
NAT: N.5.c| A.2.a TOP: 4-4 Problem 2 Finding Common Factors
KEY: factoring | greatest common factor DOK: DOK 2
25. ANS:
 $2(x + 3)(x + 5)$
- PTS: 1 DIF: L3 REF: 4-4 Factoring Quadratic Expressions
OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
NAT: N.5.c| A.2.a TOP: 4-4 Problem 2 Finding Common Factors
KEY: factoring | greatest common factor DOK: DOK 2

26. ANS:
 $-4(x - 6)(x + 2)$

PTS: 1 DIF: L3 REF: 4-4 Factoring Quadratic Expressions
 OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
 NAT: N.5.c| A.2.a TOP: 4-4 Problem 2 Finding Common Factors
 KEY: factoring | greatest common factor DOK: DOK 2

27. ANS:
 $(3x + 5)(x + 7)$

PTS: 1 DIF: L3 REF: 4-4 Factoring Quadratic Expressions
 OBJ: 4-4.1 To find common and binomial factors of quadratic expressions
 NAT: N.5.c| A.2.a TOP: 4-4 Problem 3 Factoring ax^2+bx+c when $abs(a)<1$
 KEY: factoring DOK: DOK 2

28. ANS:
 $(3x - 3)^2$

PTS: 1 DIF: L3 REF: 4-4 Factoring Quadratic Expressions
 OBJ: 4-4.2 To factor special quadratic expressions NAT: N.5.c| A.2.a
 TOP: 4-4 Problem 4 Factoring a Perfect Square Trinomial KEY: factoring | perfect square trinomial
 DOK: DOK 2

29. ANS:
 $(4x + 5)(4x - 5)$

PTS: 1 DIF: L2 REF: 4-4 Factoring Quadratic Expressions
 OBJ: 4-4.2 To factor special quadratic expressions NAT: N.5.c| A.2.a
 TOP: 4-4 Problem 5 Factoring a Difference of Two Squares
 KEY: difference of two squares | factoring DOK: DOK 2

30. ANS:
 $-4, -7$

PTS: 1 DIF: L2 REF: 4-5 Quadratic Equations
 OBJ: 4-5.1 To solve quadratic equations by factoring NAT: A.2.a| A.4.a| A.4.c
 TOP: 4-5 Problem 1 Solving a Quadratic Equation by Factoring
 DOK: DOK 2

31. ANS:
 $4, 8$

PTS: 1 DIF: L3 REF: 4-5 Quadratic Equations
 OBJ: 4-5.1 To solve quadratic equations by factoring NAT: A.2.a| A.4.a| A.4.c
 TOP: 4-5 Problem 1 Solving a Quadratic Equation by Factoring
 DOK: DOK 2

32. ANS:

$$-6, -\frac{7}{3}$$

PTS: 1 DIF: L3 REF: 4-5 Quadratic Equations
 OBJ: 4-5.1 To solve quadratic equations by factoring NAT: A.2.a| A.4.a| A.4.c
 TOP: 4-5 Problem 1 Solving a Quadratic Equation by Factoring
 DOK: DOK 2

33. ANS:

$$2, \frac{5}{2}$$

PTS: 1 DIF: L3 REF: 4-5 Quadratic Equations
 OBJ: 4-5.1 To solve quadratic equations by factoring NAT: A.2.a| A.4.a| A.4.c
 TOP: 4-5 Problem 1 Solving a Quadratic Equation by Factoring
 DOK: DOK 2

34. ANS:

$$\sqrt{7}, -\sqrt{7}$$

PTS: 1 DIF: L2 REF: 4-6 Completing the Square
 OBJ: 4-6.1 To solve equations by completing the square NAT: A.2.a| A.4.c| A.4.g
 TOP: 4-6 Problem 1 Solving by Finding Square Roots DOK: DOK 2

35. ANS:

$$-\frac{7}{6}, \frac{7}{6}$$

PTS: 1 DIF: L3 REF: 4-6 Completing the Square
 OBJ: 4-6.1 To solve equations by completing the square NAT: A.2.a| A.4.c| A.4.g
 TOP: 4-6 Problem 1 Solving by Finding Square Roots DOK: DOK 2

36. ANS:

$$1, 5$$

PTS: 1 DIF: L2 REF: 4-7 The Quadratic Formula
 OBJ: 4-7.1 To solve quadratic equations using the Quadratic Formula
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 1 Using the Quadratic Formula
 KEY: Quadratic Formula DOK: DOK 2

37. ANS:

$$-\frac{5}{4} \pm \frac{\sqrt{65}}{4}$$

PTS: 1 DIF: L3 REF: 4-7 The Quadratic Formula
 OBJ: 4-7.1 To solve quadratic equations using the Quadratic Formula
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 1 Using the Quadratic Formula
 KEY: Quadratic Formula DOK: DOK 2

38. ANS:

$$-\frac{1}{4} \pm \frac{\sqrt{33}}{4}$$

PTS: 1 DIF: L3 REF: 4-7 The Quadratic Formula
 OBJ: 4-7.1 To solve quadratic equations using the Quadratic Formula
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 1 Using the Quadratic Formula
 KEY: Quadratic Formula DOK: DOK 2

39. ANS:

$$\frac{1}{8} \pm \frac{\sqrt{65}}{8}$$

PTS: 1 DIF: L3 REF: 4-7 The Quadratic Formula
 OBJ: 4-7.1 To solve quadratic equations using the Quadratic Formula
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 1 Using the Quadratic Formula
 KEY: Quadratic Formula DOK: DOK 2

40. ANS: C PTS: 1 DIF: L2 REF: 4-7 The Quadratic Formula

OBJ: 4-7.2 To determine the number of solutions by using the discriminant
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 3 Using the Discriminant
 KEY: discriminant | Quadratic Formula DOK: DOK 2

41. ANS: B PTS: 1 DIF: L2 REF: 4-7 The Quadratic Formula

OBJ: 4-7.2 To determine the number of solutions by using the discriminant
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 3 Using the Discriminant
 KEY: discriminant | Quadratic Formula DOK: DOK 2

42. ANS: A PTS: 1 DIF: L2 REF: 4-7 The Quadratic Formula

OBJ: 4-7.2 To determine the number of solutions by using the discriminant
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 3 Using the Discriminant
 KEY: discriminant | Quadratic Formula DOK: DOK 2

43. ANS: A PTS: 1 DIF: L2 REF: 4-7 The Quadratic Formula

OBJ: 4-7.2 To determine the number of solutions by using the discriminant
 NAT: A.2.a| A.4.c| A.4.e| A.4.f TOP: 4-7 Problem 3 Using the Discriminant
 KEY: discriminant | Quadratic Formula DOK: DOK 2

44. ANS:

12i

PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 1 Simplifying a Number using i KEY: imaginary number | imaginary unit
 DOK: DOK 2

45. ANS:

$$6i\sqrt{10}$$

PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 1 Simplifying a Number using i KEY: imaginary number | imaginary unit
 DOK: DOK 2

46. ANS:
 $-5 + 8i$
- PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 3 Adding and Subtracting Complex Numbers
 KEY: complex number DOK: DOK 2
47. ANS:
 $-1 - 9i$
- PTS: 1 DIF: L3 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 3 Adding and Subtracting Complex Numbers
 KEY: complex number DOK: DOK 2
48. ANS:
 30
- PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 4 Multiplying Complex Numbers
 KEY: simplifying a complex number | complex number | multiplying complex numbers
 DOK: DOK 2
49. ANS:
 $18 + 40i$
- PTS: 1 DIF: L3 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 4 Multiplying Complex Numbers KEY: complex number
 DOK: DOK 2
50. ANS:

$$\frac{-7 + 11i}{17}$$
- PTS: 1 DIF: L3 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 5 Dividing Complex Numbers
 KEY: complex number | complex conjugates DOK: DOK 2
51. ANS:

$$\frac{-30 - 12i}{36}$$
- PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.1 To identify, graph, and perform operations with complex numbers
 TOP: 4-8 Problem 5 Dividing Complex Numbers
 KEY: complex number | complex conjugates DOK: DOK 2

52. ANS:

$$-\frac{4}{3}i, \frac{4}{3}i$$

PTS: 1 DIF: L2 REF: 4-8 Complex Numbers
 OBJ: 4-8.2 To find complex number solutions of quadratic equations
 NAT: N.5.f| A.4.g STA: L2.1.5 TOP: 4-8 Problem 6 Finding Pure Imaginary Solutions
 KEY: complex number | imaginary number DOK: DOK 2

53. ANS:

$$1 \pm \sqrt{9}i$$

PTS: 1 DIF: L3 REF: 4-8 Complex Numbers
 OBJ: 4-8.2 To find complex number solutions of quadratic equations
 NAT: N.5.f| A.4.g STA: L2.1.5 TOP: 4-8 Problem 7 Finding Imaginary Solutions
 KEY: complex number | imaginary number DOK: DOK 2

54. ANS:

quintic

PTS: 1 DIF: L2 REF: 5-1 Polynomial Functions
 OBJ: 5-1.1 To classify polynomials STA: A2.1.3
 TOP: 5-1 Problem 1 Classifying Polynomials
 KEY: degree of a polynomial | polynomial function | standard form of a polynomial function
 DOK: DOK 1

55. ANS:

polynomial of 4 terms

PTS: 1 DIF: L2 REF: 5-1 Polynomial Functions
 OBJ: 5-1.1 To classify polynomials STA: A2.1.3
 TOP: 5-1 Problem 1 Classifying Polynomials
 KEY: degree of a polynomial | polynomial function | standard form of a polynomial function
 DOK: DOK 1

56. ANS:

$$-8x^5 + 10x^4$$

PTS: 1 DIF: L3 REF: 5-1 Polynomial Functions
 OBJ: 5-1.1 To classify polynomials STA: A2.1.3
 TOP: 5-1 Problem 1 Classifying Polynomials
 KEY: degree of a polynomial | polynomial function | standard form of a polynomial
 DOK: DOK 2

57. ANS: D

PTS: 1

DIF: L2

REF: 5-1 Polynomial Functions

OBJ: 5-1.2 To graph polynomial functions and describe end behavior

STA: A2.1.3 TOP: 5-1 Problem 2 Describing End Behavior of Polynomial Functions

KEY: polynomial | end behavior DOK: DOK 1

58. ANS: C

PTS: 1

DIF: L2

REF: 5-1 Polynomial Functions

OBJ: 5-1.2 To graph polynomial functions and describe end behavior

STA: A2.1.3 TOP: 5-1 Problem 2 Describing End Behavior of Polynomial Functions

KEY: polynomial | end behavior DOK: DOK 1

59. ANS:

$$4x(x - 4)(x + 6)$$

PTS: 1

DIF: L3

REF: 5-2 Polynomials, Linear Factors, and Zeros

OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6

TOP: 5-2 Problem 1 Writing a Polynomial in Factored Form

DOK: DOK 2

60. ANS:

$$x(x + 3)(x + 6)$$

PTS: 1

DIF: L2

REF: 5-2 Polynomials, Linear Factors, and Zeros

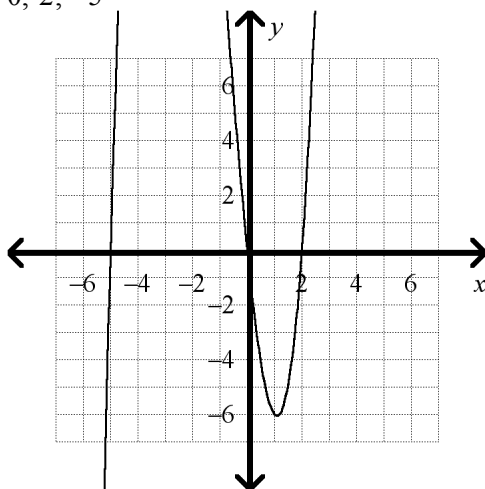
OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6

TOP: 5-2 Problem 1 Writing a Polynomial in Factored Form

DOK: DOK 2

61. ANS:

0, 2, -5



PTS: 1

DIF: L3

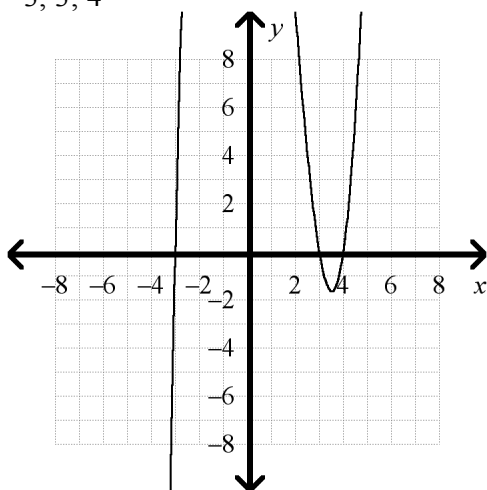
REF: 5-2 Polynomials, Linear Factors, and Zeros

OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6

TOP: 5-2 Problem 2 Finding Zeros of a Polynomial Function

DOK: DOK 2

62. ANS:
-3, 3, 4



- PTS: 1 DIF: L2 REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 2 Finding Zeros of a Polynomial Function
DOK: DOK 2
63. ANS: C PTS: 1 DIF: L3
REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.2 To write a polynomial function from its zeros STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 3 Writing a polynomial function from its zeros
DOK: DOK 2
64. ANS: A PTS: 1 DIF: L3
REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.2 To write a polynomial function from its zeros STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 3 Writing a polynomial function from its zeros
DOK: DOK 2
65. ANS: B PTS: 1 DIF: L3
REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.2 To write a polynomial function from its zeros STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 4 Finding the Multiplicity of a Zero DOK: DOK 2
66. ANS: C PTS: 1 DIF: L3
REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.2 To write a polynomial function from its zeros STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 4 Finding the Multiplicity of a Zero DOK: DOK 2
67. ANS:
The relative maximum is at $(-6, 216)$ and the relative minimum is at $(2, -40)$.
- PTS: 1 DIF: L3 REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 5 Identifying a Relative Maximum and Minimum
KEY: relative maximum | relative minimum DOK: DOK 2

68. ANS:
The relative maximum is at $(-1.53, 12.01)$ and the relative minimum is at $(1.2, -8.3)$.
- PTS: 1 DIF: L3 REF: 5-2 Polynomials, Linear Factors, and Zeros
OBJ: 5-2.1 To analyze the factored form of a polynomial STA: A1.2.2| A2.1.3| A2.1.6
TOP: 5-2 Problem 5 Identifying a Relative Maximum and Minimum
KEY: relative maximum | relative minimum DOK: DOK 2
69. ANS:
 $6, -6, 2, -2$
- PTS: 1 DIF: L2 REF: 5-3 Solving Polynomial Equations
OBJ: 5-3.1 To solve polynomial equations by factoring NAT: A.2.a
STA: A1.2.5 TOP: 5-3 Problem 1 Solving Polynomial Equations Using Factors
DOK: DOK 2
70. ANS:
 $2, -2, 4, -4$
- PTS: 1 DIF: L3 REF: 5-3 Solving Polynomial Equations
OBJ: 5-3.1 To solve polynomial equations by factoring NAT: A.2.a
STA: A1.2.5 TOP: 5-3 Problem 2 Solving Polynomial Equations by Factoring
DOK: DOK 2
71. ANS:
 $4x^2 - 14x + 59, R -232$
- PTS: 1 DIF: L2 REF: 5-4 Dividing Polynomials
OBJ: 5-4.1 To divide polynomials using long division NAT: N.1.d| A.3.c| A.3.e
STA: A1.1.5 TOP: 5-4 Problem 1 Using Polynomial Long Division
DOK: DOK 2
72. ANS:
 $-3x^2 - 8x - 17, R -36$
- PTS: 1 DIF: L3 REF: 5-4 Dividing Polynomials
OBJ: 5-4.1 To divide polynomials using long division NAT: N.1.d| A.3.c| A.3.e
STA: A1.1.5 TOP: 5-4 Problem 1 Using Polynomial Long Division
DOK: DOK 2
73. ANS:
 $x^2 - 3x + 11, R -42$
- PTS: 1 DIF: L2 REF: 5-4 Dividing Polynomials
OBJ: 5-4.1 To divide polynomials using long division NAT: N.1.d| A.3.c| A.3.e
STA: A1.1.5 TOP: 5-4 Problem 1 Using Polynomial Long Division
DOK: DOK 2
74. ANS: A PTS: 1 DIF: L4 REF: 5-4 Dividing Polynomials
OBJ: 5-4.1 To divide polynomials using long division NAT: N.1.d| A.3.c| A.3.e
STA: A1.1.5 TOP: 5-4 Problem 2 Checking Factors DOK: DOK 2

75. ANS: B PTS: 1 DIF: L4 REF: 5-4 Dividing Polynomials
 OBJ: 5-4.1 To divide polynomials using long division NAT: N.1.d| A.3.c| A.3.e
 STA: A1.1.5 TOP: 5-4 Problem 2 Checking Factors DOK: DOK 3
76. ANS:
 3, 5, -5, i , $-i$
- PTS: 1 DIF: L3 REF: 5-6 The Fundamental Theorem of Algebra
 OBJ: 5-6.1 To use the Fundamental Theorem of Algebra to solve polynomial equations with complex solutions STA: A1.2.2| A2.1.6
 TOP: 5-6 Problem 2 Finding All the Zeros of a Polynomial Function
 KEY: Fundamental Theorem of Algebra DOK: DOK 2
77. ANS:
 1, 2, -2, i , $-i$
- PTS: 1 DIF: L4 REF: 5-6 The Fundamental Theorem of Algebra
 OBJ: 5-6.1 To use the Fundamental Theorem of Algebra to solve polynomial equations with complex solutions STA: A1.2.2| A2.1.6
 TOP: 5-6 Problem 2 Finding All the Zeros of a Polynomial Function
 KEY: Fundamental Theorem of Algebra DOK: DOK 2
78. ANS:
 $i\sqrt{13}$, $-i\sqrt{13}$, -1
- PTS: 1 DIF: L2 REF: 5-6 The Fundamental Theorem of Algebra
 OBJ: 5-6.1 To use the Fundamental Theorem of Algebra to solve polynomial equations with complex solutions STA: A1.2.2| A2.1.6
 TOP: 5-6 Problem 2 Finding All the Zeros of a Polynomial Function
 KEY: Rational Root Theorem DOK: DOK 2
79. ANS:
 3, -3, $4i$, $-4i$
- PTS: 1 DIF: L3 REF: 5-6 The Fundamental Theorem of Algebra
 OBJ: 5-6.1 To use the Fundamental Theorem of Algebra to solve polynomial equations with complex solutions STA: A1.2.2| A2.1.6
 TOP: 5-6 Problem 2 Finding All the Zeros of a Polynomial Function
 KEY: Fundamental Theorem of Algebra DOK: DOK 2
80. ANS:
 1
- PTS: 1 DIF: L2 REF: 7-1 Zero and Negative Exponents
 OBJ: 7-1.1 To simplify expressions involving zero and negative exponents
 NAT: N.1.d| N.3.a| A.3.c| A.3.h STA: L1.1.4| L2.1.2| A1.1.2
 TOP: 7-1 Problem 1 Simplifying Powers DOK: DOK 1

81. ANS:

$$-\frac{1}{10}$$

PTS: 1 DIF: L2 REF: 7-1 Zero and Negative Exponents
 OBJ: 7-1.1 To simplify expressions involving zero and negative exponents
 NAT: N.1.d| N.3.a| A.3.c| A.3.h STA: L1.1.4| L2.1.2| A1.1.2
 TOP: 7-1 Problem 1 Simplifying Powers DOK: DOK 1

82. ANS:

$$12c^9$$

PTS: 1 DIF: L2 REF: 7-3 Multiplying Powers With the Same Base
 OBJ: 7-3.1 To multiply powers with the same base NAT: N.1.d| N.1.f| N.3.a| A.3.c| A.3.h
 STA: L1.1.4| L2.1.2| A1.1.2
 TOP: 7-3 Problem 2 Multiplying Powers in Algebraic Expressions
 DOK: DOK 1

83. ANS:

$$-12x^{12}y^9$$

PTS: 1 DIF: L4 REF: 7-3 Multiplying Powers With the Same Base
 OBJ: 7-3.1 To multiply powers with the same base NAT: N.1.d| N.1.f| N.3.a| A.3.c| A.3.h
 STA: L1.1.4| L2.1.2| A1.1.2
 TOP: 7-3 Problem 2 Multiplying Powers in Algebraic Expressions
 DOK: DOK 1

84. ANS:

$$m^{14}$$

PTS: 1 DIF: L2 REF: 7-4 More Multiplication Properties of Exponents
 OBJ: 7-4.1 To raise a power to a power NAT: N.1.d| N.1.f| N.3.a| A.3.c| A.3.h
 STA: L1.1.4| L2.1.2| A1.1.2 TOP: 7-4 Problem 1 Simplifying a Power Raised to a Power
 DOK: DOK 1

85. ANS:

$$y^{60}$$

PTS: 1 DIF: L4 REF: 7-4 More Multiplication Properties of Exponents
 OBJ: 7-4.1 To raise a power to a power NAT: N.1.d| N.1.f| N.3.a| A.3.c| A.3.h
 STA: L1.1.4| L2.1.2| A1.1.2 TOP: 7-4 Problem 2 Simplifying an Expression With Powers
 DOK: DOK 1

86. ANS:

$$81q^8$$

PTS: 1 DIF: L3 REF: 7-4 More Multiplication Properties of Exponents
 OBJ: 7-4.2 To raise a product to a power
 NAT: N.1.d| N.1.f| N.3.a| A.3.c| A.3.h STA: L1.1.4| L2.1.2| A1.1.2
 TOP: 7-4 Problem 3 Simplifying a Product Raised to a Power
 DOK: DOK 1

87. ANS:
0.02 and -0.02

PTS: 1 DIF: L4 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 1 Finding All Real Roots KEY: nth root
DOK: DOK 1

88. ANS:
0.03

PTS: 1 DIF: L4 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 1 Finding All Real Roots KEY: nth root
DOK: DOK 1

89. ANS:
1.3

PTS: 1 DIF: L3 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 2 Finding Roots KEY: radicand | index | nth root
DOK: DOK 1

90. ANS:
no real number root

PTS: 1 DIF: L3 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 2 Finding Roots KEY: radicand | index | nth root
DOK: DOK 1

91. ANS:
 $6|g^3|$

PTS: 1 DIF: L2 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 3 Simplifying Radical Expressions KEY: radicand | index | nth root
DOK: DOK 1

92. ANS:
 $3|x^5|y^2$

PTS: 1 DIF: L3 REF: 6-1 Roots and Radical Expressions
OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
TOP: 6-1 Problem 3 Simplifying Radical Expressions KEY: radicand | index | nth root
DOK: DOK 1

93. ANS:
 $3x^5y^8$

PTS: 1 DIF: L3 REF: 6-1 Roots and Radical Expressions
 OBJ: 6-1.1 To find nth roots NAT: A.3.e STA: A1.1.4
 TOP: 6-1 Problem 3 Simplifying Radical Expressions KEY: radicand | index | nth root
 DOK: DOK 1

94. ANS:
 $2\sqrt{3}$

PTS: 1 DIF: L2 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 1 Multiplying Radical Expressions
 DOK: DOK 1

95. ANS:
 $\sqrt[4]{33}$

PTS: 1 DIF: L2 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 1 Multiplying Radical Expressions
 DOK: DOK 1

96. ANS:

$$x\sqrt{7} - 49\sqrt{x}$$

PTS: 1 DIF: L4 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 1 Multiplying Radical Expressions
 DOK: DOK 2

97. ANS:

$$4a^4b^2\sqrt[3]{2a}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 2 Simplifying a Radical Expression
 KEY: simplest form of a radical DOK: DOK 1

98. ANS:

$$3a^5b^3\sqrt[3]{4a}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 2 Simplifying a Radical Expression
 KEY: simplest form of a radical DOK: DOK 1

99. ANS:

$$x^3 \cdot \sqrt[3]{63x^2}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 3 Simplifying a Product
 KEY: simplest form of a radical DOK: DOK 2

100. ANS:

$$10x^4y^5\sqrt{3y}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 3 Simplifying a Product
 KEY: simplest form of a radical DOK: DOK 2

101. ANS:

$$3\sqrt[3]{3}$$

PTS: 1 DIF: L2 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 4 Dividing Radical Expressions
 KEY: simplest form of a radical DOK: DOK 1

102. ANS:

$$2\sqrt[4]{5}$$

PTS: 1 DIF: L2 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 4 Dividing Radical Expressions
 KEY: simplest form of a radical DOK: DOK 1

103. ANS:

$$3x^6\sqrt[3]{2x}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 4 Dividing Radical Expressions
 KEY: simplest form of a radical DOK: DOK 1

104. ANS:

$$\frac{x^3y^2\sqrt{30y}}{5}$$

PTS: 1 DIF: L3 REF: 6-2 Multiplying and Dividing Radical Expressions
 OBJ: 6-2.1 To multiply and divide radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-2 Problem 5 Rationalizing the Denominator
 KEY: rationalizing the denominator DOK: DOK 1

105. ANS:

$$8\sqrt[4]{2x}$$

PTS: 1 DIF: L2 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 1 Adding and Subtracting Radical Expressions
 KEY: like radicals DOK: DOK 1

106. ANS:

not possible to simplify

PTS: 1 DIF: L3 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 1 Adding and Subtracting Radical Expressions
 KEY: like radicals DOK: DOK 1

107. ANS:

$$-3\sqrt{2a}$$

PTS: 1 DIF: L2 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 1 Adding and Subtracting Radical Expressions
 KEY: like radicals DOK: DOK 1

108. ANS: A

PTS: 1 DIF: L3 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 3 Simplifying Before Adding or Subtracting
 DOK: DOK 2

109. ANS: A

PTS: 1 DIF: L4 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 3 Simplifying Before Adding or Subtracting
 DOK: DOK 2

110. ANS:

$$54 - \sqrt{2}$$

PTS: 1 DIF: L2 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 4 Multiplying Binomial Radical Expressions
 DOK: DOK 1

111. ANS:

$$28 + 10\sqrt{3}$$

PTS: 1 DIF: L3 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 4 Multiplying Binomial Radical Expressions
 DOK: DOK 2

112. ANS:

$$-3 + 2\sqrt{2}$$

PTS: 1 DIF: L3 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 6 Rationalizing the Denominator
 DOK: DOK 1

113. ANS:

$$\frac{2^3\sqrt{36} + 3^3\sqrt{4}}{6}$$

PTS: 1 DIF: L2 REF: 6-3 Binomial Radical Expressions
 OBJ: 6-3.1 To add and subtract radical expressions NAT: N.5.e| A.3.c| A.3.e
 STA: A1.1.4 TOP: 6-3 Problem 6 Rationalizing the Denominator
 DOK: DOK 1

114. ANS:

20

PTS: 1 DIF: L3 REF: 6-4 Rational Exponents
 OBJ: 6-4.1 To simplify expressions with rational exponents
 TOP: 6-4 Problem 1 Simplifying Expressions with Rational Exponents
 KEY: rational exponents DOK: DOK 1

115. ANS:

3

PTS: 1 DIF: L3 REF: 6-4 Rational Exponents
 OBJ: 6-4.1 To simplify expressions with rational exponents
 TOP: 6-4 Problem 1 Simplifying Expressions with Rational Exponents
 KEY: rational exponents DOK: DOK 1

116. ANS: B PTS: 1 DIF: L2 REF: 6-4 Rational Exponents

OBJ: 6-4.1 To simplify expressions with rational exponents
 TOP: 6-4 Problem 1 Simplifying Expressions with Rational Exponents
 KEY: rational exponents DOK: DOK 1

117. ANS:

$$3^8\sqrt{x^3}$$

PTS: 1 DIF: L2 REF: 6-4 Rational Exponents
 OBJ: 6-4.1 To simplify expressions with rational exponents
 TOP: 6-4 Problem 2 Converting Between Exponential and Radical Form
 KEY: rational exponents DOK: DOK 1

118. ANS:

$$8x^{-\frac{15}{7}}$$

PTS: 1 DIF: L4 REF: 6-4 Rational Exponents

OBJ: 6-4.1 To simplify expressions with rational exponents

TOP: 6-4 Problem 2 Converting Between Exponential and Radical Form

KEY: rational exponents DOK: DOK 1

119. ANS: A PTS: 1 DIF: L3 REF: 6-4 Rational Exponents

OBJ: 6-4.1 To simplify expressions with rational exponents

TOP: 6-4 Problem 4 Combining Radical Expressions KEY: rational exponent

DOK: DOK 1

120. ANS: B PTS: 1 DIF: L3 REF: 6-4 Rational Exponents

OBJ: 6-4.1 To simplify expressions with rational exponents

TOP: 6-4 Problem 4 Combining Radical Expressions KEY: rational exponent

DOK: DOK 1

121. ANS: A PTS: 1 DIF: L3 REF: 6-4 Rational Exponents

OBJ: 6-4.1 To simplify expressions with rational exponents

TOP: 6-4 Problem 5 Simplifying Numbers With Rational Exponents

KEY: rational exponent DOK: DOK 1

122. ANS:

-6

PTS: 1 DIF: L2 REF: 6-5 Solving Square Root and Other Radical Equations

OBJ: 6-5.1 To solve square root and other radical equations NAT: A.2.a

TOP: 6-5 Problem 1 Solving a Square Root Equation KEY: square root equation

DOK: DOK 2

123. ANS:

28

PTS: 1 DIF: L2 REF: 6-5 Solving Square Root and Other Radical Equations

OBJ: 6-5.1 To solve square root and other radical equations NAT: A.2.a

TOP: 6-5 Problem 1 Solving a Square Root Equation KEY: square root equation

DOK: DOK 2

124. ANS:

26

PTS: 1 DIF: L3 REF: 6-5 Solving Square Root and Other Radical Equations

OBJ: 6-5.1 To solve square root and other radical equations NAT: A.2.a

TOP: 6-5 Problem 2 Solving Other Radical Equations KEY: radical equation

DOK: DOK 2

125. ANS:

-4

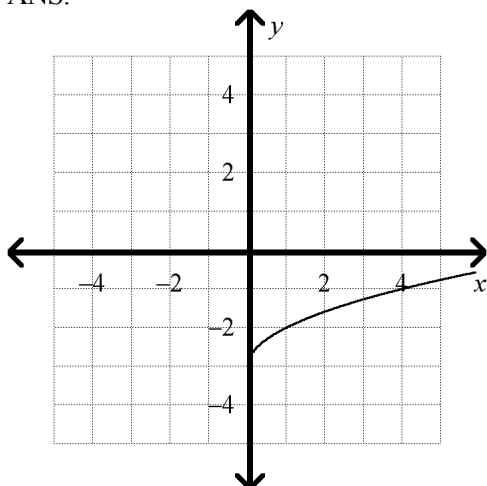
PTS: 1 DIF: L3 REF: 6-5 Solving Square Root and Other Radical Equations

OBJ: 6-5.1 To solve square root and other radical equations NAT: A.2.a

TOP: 6-5 Problem 4 Checking for Extraneous Solutions KEY: radical equation

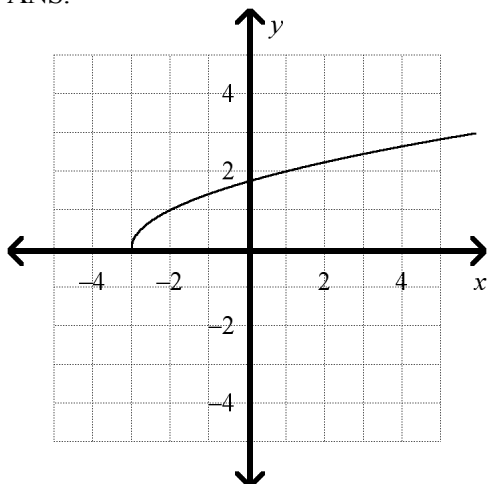
DOK: DOK 2

126. ANS:



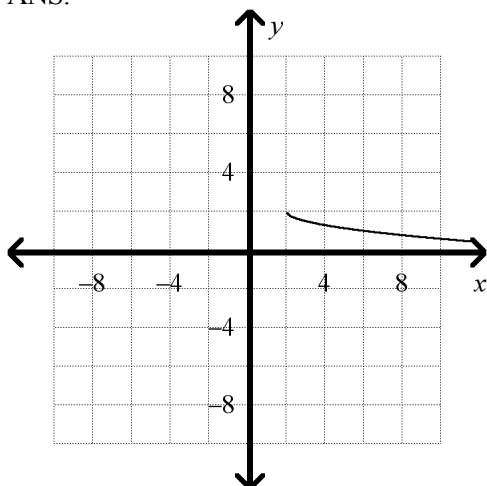
PTS: 1 DIF: L2 REF: 6-8 Graphing Radical Functions
 OBJ: 6-8.1 To graph square root and other radical functions NAT: G.2.c
 STA: A2.2.2 TOP: 6-8 Problem 1 Translating a Square Root Function Vertically
 KEY: square root function DOK: DOK 2

127. ANS:



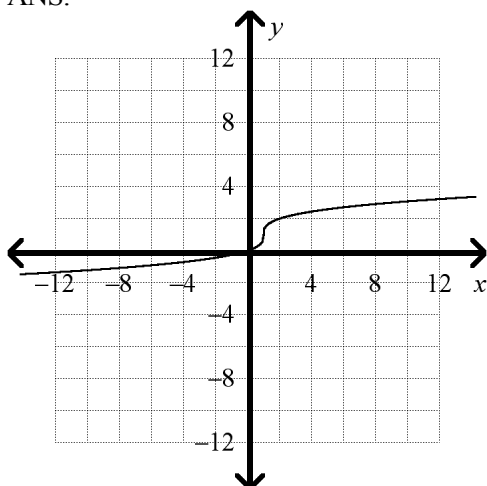
PTS: 1 DIF: L2 REF: 6-8 Graphing Radical Functions
 OBJ: 6-8.1 To graph square root and other radical functions NAT: G.2.c
 STA: A2.2.2 TOP: 6-8 Problem 2 Translating a Square Root Function Horizontally
 KEY: square root function DOK: DOK 2

128. ANS:



PTS: 1 DIF: L4 REF: 6-8 Graphing Radical Functions
 OBJ: 6-8.1 To graph square root and other radical functions NAT: G.2.c
 STA: A2.2.2 TOP: 6-8 Problem 3 Graphing a square root function
 KEY: square root function DOK: DOK 2

129. ANS:



PTS: 1 DIF: L3 REF: 6-8 Graphing Radical Functions
 OBJ: 6-8.1 To graph square root and other radical functions NAT: G.2.c
 STA: A2.2.2 TOP: 6-8 Problem 5 Graphing a Cube Root Function
 KEY: radical function DOK: DOK 2

130. ANS:

irrational numbers

PTS: 1 DIF: L2 REF: 1-2 Properties of Real Numbers
 OBJ: 1-2.1 To graph and order real numbers NAT: N.1.i| N.5.f
 STA: L1.2.1 TOP: 1-2 Problem 1 Classifying a Variable
 DOK: DOK 1

131. ANS:
integers

PTS: 1 DIF: L2 REF: 1-2 Properties of Real Numbers
OBJ: 1-2.1 To graph and order real numbers NAT: N.1.i| N.5.f
STA: L1.2.1 TOP: 1-2 Problem 1 Classifying a Variable
DOK: DOK 1

132. ANS:
rational numbers

PTS: 1 DIF: L2 REF: 1-2 Properties of Real Numbers
OBJ: 1-2.1 To graph and order real numbers NAT: N.1.i| N.5.f
STA: L1.2.1 TOP: 1-2 Problem 1 Classifying a Variable

133. ANS: D PTS: 1 DIF: L2 REF: 1-3 Algebraic Expressions
OBJ: 1-3.1 To evaluate algebraic expressions NAT: N.1.d| N.3.a| N.3.b| A.3.b| A.3.d
STA: L1.2.1| A1.1.1
TOP: 1-3 Problem 1 Modeling Words With an Algebraic Expression
DOK: DOK 1

134. ANS: B PTS: 1 DIF: L3 REF: 1-3 Algebraic Expressions
OBJ: 1-3.1 To evaluate algebraic expressions NAT: N.1.d| N.3.a| N.3.b| A.3.b| A.3.d
STA: L1.2.1| A1.1.1
TOP: 1-3 Problem 1 Modeling Words With an Algebraic Expression
DOK: DOK 1

135. ANS:
-55

PTS: 1 DIF: L2 REF: 1-3 Algebraic Expressions
OBJ: 1-3.1 To evaluate algebraic expressions NAT: N.1.d| N.3.a| N.3.b| A.3.b| A.3.d
STA: L1.2.1| A1.1.1 TOP: 1-3 Problem 3 Evaluating Algebraic Expressions
KEY: evaluate DOK: DOK 1

136. ANS:
21

PTS: 1 DIF: L4 REF: 1-3 Algebraic Expressions
OBJ: 1-3.1 To evaluate algebraic expressions NAT: N.1.d| N.3.a| N.3.b| A.3.b| A.3.d
STA: L1.2.1| A1.1.1 TOP: 1-3 Problem 3 Evaluating Algebraic Expressions
KEY: evaluate DOK: DOK 1

137. ANS:
-17

PTS: 1 DIF: L2 REF: 1-4 Solving Equations
OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
TOP: 1-4 Problem 2 Solving a Multi-Step Equation
KEY: equation | solution of an equation | inverse operations DOK: DOK 1

138. ANS:

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

PTS: 1 DIF: L2 REF: 1-4 Solving Equations
 OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
 TOP: 1-4 Problem 2 Solving a Multi-Step Equation
 KEY: equation | solution of an equation | inverse operations DOK: DOK 1

139. ANS:

always

PTS: 1 DIF: L3 REF: 1-4 Solving Equations
 OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
 TOP: 1-4 Problem 4 Equations with No Solutions and Identities
 KEY: equation | identity DOK: DOK 1

140. ANS:

never

PTS: 1 DIF: L3 REF: 1-4 Solving Equations
 OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
 TOP: 1-4 Problem 4 Equations with No Solutions and Identities
 KEY: equation DOK: DOK 1

141. ANS:

$$t = \frac{S}{5r^2}$$

PTS: 1 DIF: L3 REF: 1-4 Solving Equations
 OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
 TOP: 1-4 Problem 5 Solving a Literal Equation KEY: equation | literal equation
 DOK: DOK 2

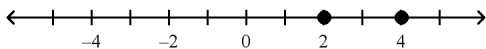
142. ANS:

$$U = \frac{TE}{4}$$

PTS: 1 DIF: L3 REF: 1-4 Solving Equations
 OBJ: 1-4.1 To solve equations NAT: A.2.a| A.4.c STA: L1.2.1| A1.2.8| A1.2.9
 TOP: 1-4 Problem 5 Solving a Literal Equation KEY: equation | literal equation
 DOK: DOK 2

143. ANS:

$$x = 4 \text{ or } x = 2$$



PTS: 1

DIF: L2

REF: 1-6 Absolute Value Equations and Inequalities

OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value

NAT: N.1.g| N.3.c| A.2.a| A.4.c

STA: L1.2.1

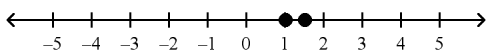
TOP: 1-6 Problem 1 Solving an Absolute Value Equation

KEY: absolute value

DOK: DOK 1

144. ANS:

$$x = 1 \text{ or } x = 1\frac{1}{2}$$



PTS: 1

DIF: L2

REF: 1-6 Absolute Value Equations and Inequalities

OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value

NAT: N.1.g| N.3.c| A.2.a| A.4.c

STA: L1.2.1

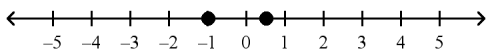
TOP: 1-6 Problem 2 Solving a Multi-Step Absolute Value Equation

KEY: absolute value

DOK: DOK 1

145. ANS:

$$x = -1 \text{ or } x = \frac{1}{2}$$



PTS: 1

DIF: L3

REF: 1-6 Absolute Value Equations and Inequalities

OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value

NAT: N.1.g| N.3.c| A.2.a| A.4.c

STA: L1.2.1

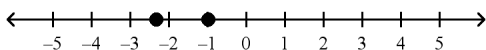
TOP: 1-6 Problem 1 Solving an Absolute Value Equation

KEY: absolute value

DOK: DOK 1

146. ANS:

$$x = -1 \text{ or } x = -2\frac{1}{3}$$



PTS: 1

DIF: L3

REF: 1-6 Absolute Value Equations and Inequalities

OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value

NAT: N.1.g| N.3.c| A.2.a| A.4.c

STA: L1.2.1

TOP: 1-6 Problem 2 Solving a Multi-Step Absolute Value Equation

KEY: absolute value

DOK: DOK 1

147. ANS:

$$x = \frac{10}{7}$$

PTS: 1 DIF: L3 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 3 Checking for Extraneous Solutions
 KEY: absolute value | extraneous solution DOK: DOK 2

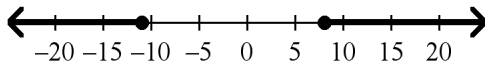
148. ANS:

$$x = \frac{8}{7}$$

PTS: 1 DIF: L3 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 3 Checking for Extraneous Solutions
 KEY: absolute value | extraneous solution DOK: DOK 2

149. ANS:

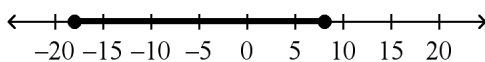
$$x \leq -11 \text{ or } x \geq 8$$



PTS: 1 DIF: L3 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 5 Solving the Absolute Value Inequality; "greater than"
 KEY: absolute value DOK: DOK 2

150. ANS:

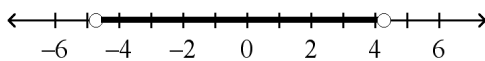
$$-18 \leq x \leq 8$$



PTS: 1 DIF: L3 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 4 Solving the Absolute Value Inequality; "less than"
 KEY: absolute value DOK: DOK 2

151. ANS:

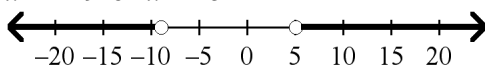
$$-4\frac{3}{4} < x < 4\frac{1}{4}$$



PTS: 1 DIF: L4 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 4 Solving the Absolute Value Inequality; "less than"
 KEY: absolute value DOK: DOK 2

152. ANS:

$$x < -9 \text{ or } x > 5$$



PTS: 1 DIF: L3 REF: 1-6 Absolute Value Equations and Inequalities
 OBJ: 1-6.1 To write and solve equations and inequalities involving absolute value
 NAT: N.1.g| N.3.c| A.2.a| A.4.c STA: L1.2.1
 TOP: 1-6 Problem 5 Solving the Absolute Value Inequality; "greater than"
 KEY: absolute value DOK: DOK 2

153. ANS: A

PTS: 1

DIF: L2

REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
 NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
 TOP: 2-3 Problem 1 Finding Slope KEY: slope DOK: DOK 1

154. ANS: A

PTS: 1

DIF: L3

REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
 NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
 TOP: 2-3 Problem 1 Finding Slope KEY: slope DOK: DOK 1

155. ANS: A

PTS: 1

DIF: L3

REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
 NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
 TOP: 2-3 Problem 1 Finding Slope KEY: slope DOK: DOK 1

156. ANS: C

PTS: 1

DIF: L3

REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
 NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
 TOP: 2-3 Problem 2 Writing Linear Equations KEY: linear equation
 DOK: DOK 2

157. ANS: B

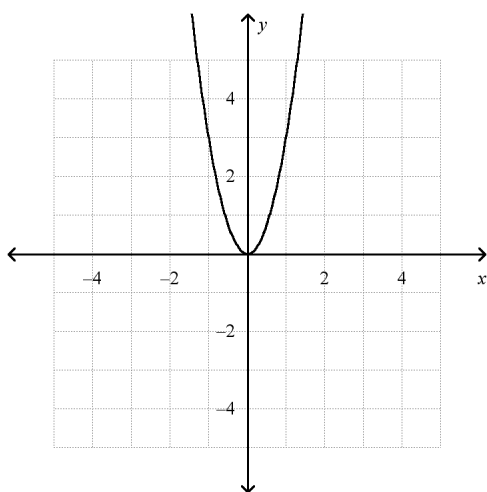
PTS: 1

DIF: L3

REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
 NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
 TOP: 2-3 Problem 3 Writing Equations in Slope-Intercept Form
 KEY: linear equation | slope | y-intercept DOK: DOK 1

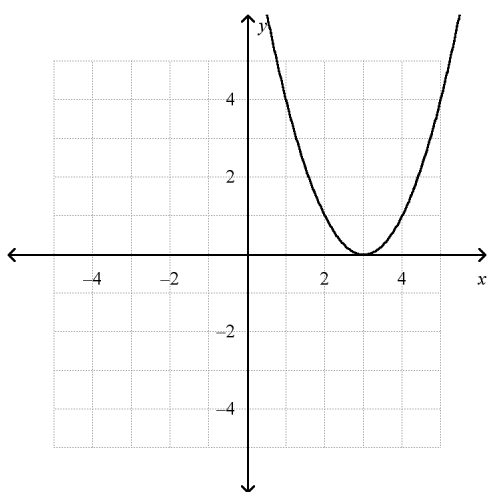
158. ANS: B PTS: 1 DIF: L2
REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
TOP: 2-3 Problem 4 Graphing a Linear Equation KEY: linear equation
DOK: DOK 2
159. ANS: B PTS: 1 DIF: L3
REF: 2-3 Linear Functions and Slope-Intercept Form OBJ: 2-3.1 To graph linear equations
NAT: G.4.d| A.1.b| A.2.b STA: L1.2.1| A2.1.3
TOP: 2-3 Problem 4 Graphing a Linear Equation KEY: linear equation
DOK: DOK 2
160. ANS: A PTS: 1 DIF: L2 REF: 2-4 More About Linear Equations
OBJ: 2-4.1 To write an equation of a line given its slope and a point on the line
NAT: G.4.d| A.2.a| A.2.b STA: L1.2.1
TOP: 2-4 Problem 2 Writing an Equation Given Two Points KEY: linear equation
DOK: DOK 2
161. ANS: B PTS: 1 DIF: L2 REF: 2-4 More About Linear Equations
OBJ: 2-4.1 To write an equation of a line given its slope and a point on the line
NAT: G.4.d| A.2.a| A.2.b STA: L1.2.1
TOP: 2-4 Problem 1 Writing an Equation Given a Point and a Slope
KEY: linear equation DOK: DOK 2
162. ANS: D PTS: 1 DIF: L2 REF: 2-4 More About Linear Equations
OBJ: 2-4.1 To write an equation of a line given its slope and a point on the line
NAT: G.4.d| A.2.a| A.2.b STA: L1.2.1
TOP: 2-4 Problem 3 Writing an Equation in Standard Form KEY: standard form of a linear equation
DOK: DOK 2
163. ANS: D PTS: 1 DIF: L3 REF: 2-4 More About Linear Equations
OBJ: 2-4.1 To write an equation of a line given its slope and a point on the line
NAT: G.4.d| A.2.a| A.2.b STA: L1.2.1
TOP: 2-4 Problem 4 Graphing an Equation Using Intercepts DOK: DOK 2
164. ANS: C PTS: 1 DIF: L3 REF: 2-4 More About Linear Equations
OBJ: 2-4.1 To write an equation of a line given its slope and a point on the line
NAT: G.4.d| A.2.a| A.2.b STA: L1.2.1
TOP: 2-4 Problem 4 Graphing an Equation Using Intercepts DOK: DOK 2

165. ANS:



PTS: 1 DIF: L2 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2
 TOP: 4-1 Problem 1 Graphing a Function of the Form $f(x)=ax^2$
 KEY: graphing | quadratic functions DOK: DOK 2

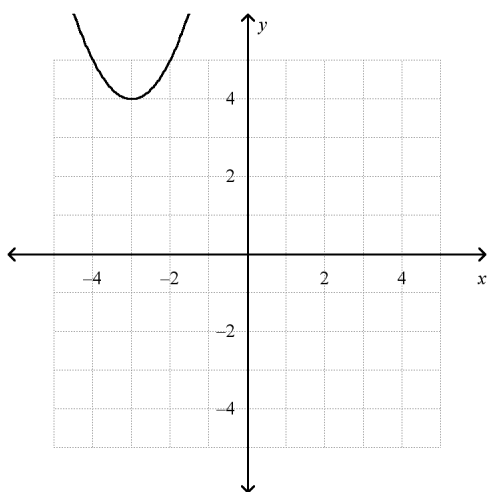
166. ANS:



$f(x)$ translated to the right 3 unit(s)

PTS: 1 DIF: L2 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 2 Graphing Translations of $f(x)=x^2$
 KEY: graphing | quadratic functions | translations DOK: DOK 2

167. ANS:

 $f(x)$ translated up 4 unit(s) and translated to the left 3 unit(s).

PTS: 1 DIF: L3 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 2 Graphing Translations of $f(x)=x^2$
 KEY: graphing | quadratic functions | translations DOK: DOK 2

168. ANS:

vertex: $(-2, -4)$;
 axis of symmetry: $x = -2$

PTS: 1 DIF: L3 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 3 Interpreting Vertex Form
 KEY: parabola | vertex of a parabola | y-intercept DOK: DOK 2

169. ANS:

minimum value: -3
 domain: all real numbers
 range: all real numbers ≥ -3

PTS: 1 DIF: L3 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 3 Interpreting Vertex Form
 KEY: parabola | vertex of a parabola | y-intercept DOK: DOK 2

170. ANS: A PTS: 1 DIF: L3

REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 4 Using Vertex Form
 KEY: graphing | translation DOK: DOK 2

171. ANS:

reflect across the x-axis, translate 3 units to the left, translate up 5 units

PTS: 1 DIF: L3 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2 TOP: 4-1 Problem 4 Using Vertex Form
 KEY: parabola | vertex of a parabola | y-intercept DOK: DOK 2

172. ANS:

$$y = 3(x + 2)^2 + 2$$

PTS: 1 DIF: L2 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2
 TOP: 4-1 Problem 5 Writing a Quadratic Function in Vertex Form
 KEY: parabola | equation of a parabola | vertex form DOK: DOK 2

173. ANS:

$$y = 3(x + 8)^2 - 7$$

PTS: 1 DIF: L3 REF: 4-1 Quadratic Functions and Transformations
 OBJ: 4-1.1 To identify and graph quadratic functions NAT: G.2.c| A.2.d
 STA: A2.1.3| A2.2.2
 TOP: 4-1 Problem 5 Writing a Quadratic Function in Vertex Form
 KEY: quadratic function | equation DOK: DOK 2

174. ANS:

vertex: $(-1, -6)$ axis of symmetry: $x = -1$

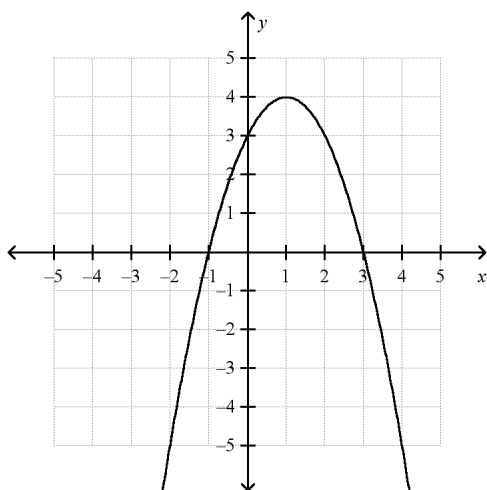
PTS: 1 DIF: L2 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 1 Finding the Features of a Quadratic Function
 KEY: standard form DOK: DOK 2

175. ANS:

vertex: $(4, 8)$ axis of symmetry: $x = 4$

PTS: 1 DIF: L3 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 1 Finding the Features of a Quadratic Function
 KEY: standard form DOK: DOK 2

176. ANS:



PTS: 1 DIF: L3 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 2 Graphing a Function of the Form $y=ax^2+bx+c$
 KEY: standard form DOK: DOK 2

177. ANS:

$$y = (x - 1)^2 + 7$$

PTS: 1 DIF: L2 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 3 Converting Standard Form to Vertex Form
 KEY: standard form DOK: DOK 2

178. ANS:

$$y = (x + 4)^2 - 22$$

PTS: 1 DIF: L2 REF: 4-2 Standard Form of a Quadratic Function
 OBJ: 4-2.1 To graph quadratic functions written in standard form
 STA: A2.1.3 TOP: 4-2 Problem 3 Converting Standard Form to Vertex Form
 KEY: standard form DOK: DOK 2

179. ANS: C PTS: 1 DIF: L3

REF: 4-3 Modeling With Quadratic Functions
 OBJ: 4-3.1 To model data with quadratic functions NAT: A.2.f
 STA: A2.1.3 TOP: 4-3 Problem 2 Using a Quadratic Model
 KEY: quadratic model | quadratic function | word problem | problem solving | multi-part question
 DOK: DOK 3