Pre-Calculus 11 Final Review (calculators, formula sheet, scap and graph paper permitted)

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Classify the number $\sqrt{\frac{16}{4}}$.

I. Positive integer
II. Rational number
III. Irrational number
IV. Real number

a. I, II, and IV b. III and IV c. II and IV d. I and II

____ 2. Which set of numbers contains all rational numbers?

a. $-5,\ \sqrt{10},\ 0.858585\ldots$
b. $0,\ \sqrt{25},\ -1.\overline{6}$
c. $5,\ \frac{5}{10},\ \sqrt{7}$
d. $-\sqrt{5},\ -\sqrt{49},\ -3.35$

____ 3. Write $\frac{4}{9}$ as a square root.

a. $\sqrt[3]{\frac{64}{729}}$ b. $\sqrt{\frac{16}{18}}$ c. $\sqrt{\frac{8}{81}}$ d. $\sqrt{\frac{16}{81}}$

____ 4. Simplify: $3^{\frac{1}{2}} \cdot 3^{\frac{1}{2}}$

a. $3^{\frac{1}{4}}$ b. 3 c. 1 d. $\sqrt{3}$

____ 5. Which power is equivalent to $\left(\sqrt[7]{-125}\right)^4$?

a. $-125^{\frac{4}{7}}$ b. $(-125)^{\frac{7}{4}}$ c. $(-125)^{\frac{4}{7}}$ d. $-125^{\frac{7}{4}}$

____ 6. Which expression is equivalent to $\left(\frac{50}{32}\right)^{-\frac{3}{2}}$?

a. $\left(\frac{25}{16}\right)^{\frac{3}{2}}$ b. $\left(\frac{16}{25}\right)^{\frac{2}{3}}$ c. $\sqrt{\left(\frac{16}{25}\right)^3}$ d. $\sqrt[3]{\left(\frac{16}{25}\right)^2}$

____ 7. Write $\frac{1}{25}$ as a power with a negative exponent.

a. 2^{-5} b. 5^{-2} c. $(-5)^2$ d. -5^{-2}

____ 8. Simplify $4x^{-6} \cdot 2x^3$. Write the expression with positive exponents.

a. $\frac{x^3}{64}$ b. $\frac{8}{x^3}$ c. $\frac{64}{x^3}$ d. $-\frac{x^3}{8}$

____ 9. Evaluate $\left(\dfrac{9^{\frac{5}{8}}}{9^{\frac{1}{8}} \cdot 9^{\frac{1}{4}}}\right)^{8}$. Write the answer as an integer or a fraction in lowest terms.

a. $\dfrac{81}{5}$ b. $-\dfrac{1}{81}$ c. 81 d. $\dfrac{1}{81}$

____ 10. Simplify $\left(\dfrac{5}{2}a^{-2}b^{6}\right)^{-3}$. Write the expression with positive exponents.

a. $\dfrac{125a^{6}}{8b^{18}}$ b. $\dfrac{8b^{3}}{125a^{5}}$ c. $\dfrac{125b^{18}}{8a^{6}}$ d. $\dfrac{8a^{6}}{125b^{18}}$

____ 11. Evaluate $(a^{-6}b^{-3})^{3}(a^{5}b^{6})^{2}$ for $a = -1$ and $b = 3$.

a. 27 b. –27 c. $\dfrac{1}{27}$ d. $-\dfrac{1}{27}$

____ 12. Write $\sqrt{200}$ as a mixed radical.

a. $10\sqrt{2}$ b. $2\sqrt{50}$ c. $100\sqrt{2}$ d. $2\sqrt{10}$

____ 13. Expand. $(4x - 6)(2x - 5)$

a. $8x^2 - 32x + 30$ c. $8x^2 - 8x - 30$
b. $8x^2 + 32x + 30$ d. $8x^2 + 8x - 30$

____ 14. Determine which trinomial is factorable.

a. $x^2 - 5x + 6$ c. $x^2 - 5x + 9$
b. $x^2 + 2x + 6$ d. $2x^2 + 5x + 6$

____ 15. Determine which trinomial cannot be factored.

a. $2x^2 - 9x - 5$ c. $3x^2 + x - 2$
b. $3x^2 + x + 2$ d. $2x^2 - 4x - 5$

____ 16. Factor the trinomial $x^2 + 7x + 10$.

a. $(x + 5)(x + 2)$ c. $(x + 5)(x – 2)$
b. $(x – 5)(x – 2)$ d. $(x – 5)(x + 2)$

____ 17. Factor the trinomial $2x^2 + 3x - 9$.

a. $(2x + 3)(x + 3)$ c. $(2x + 3)(x - 3)$
b. $(2x - 3)(x + 3)$ d. $(2x - 3)(x - 3)$

____ 18. Factor the trinomial $60x^2 - 27x - 54$.

a. $(5x - 6)(12x + 9)$ c. $(5x - 6)(4x + 3)$
b. $3(5x - 6)(4x + 3)$ d. $3(5x + 6)(4x + 3)$

____ 19. Factor the trinomial $-3x^2 - 6x + 72$.

a. $6(x - 3)(x - 4)$ c. $-3(x + 6)(x + 4)$
b. $-4(x + 6)(x - 3)$ d. $-3(x - 4)(x + 6)$

____ 20. Factor: $49b^2 - 64$

a. $(8b + 7)(8b - 7)$ c. $(7b - 8)(7b - 8)$
b. $(7b + 8)(7b - 8)$ d. $(7b + 8)(7b + 8)$

____ 21. Factor: $4x^2 - 25y^2$

a. $(5x + 2y)(5x - 2y)$
b. $(2x - 5y)(2x - 5y)$
c. $(2x + 5y)(2x - 5y)$
d. $(2x + 5)(2x - 5)$

____ 22. Factor: $9m^2 - 42m + 49$

a. $(3m + 7)^2$
b. $(3m - 7)^2$
c. $(3m - 49)(3m - 1)$
d. $(3m - 7)(3m + 7)$

____ 23. Factor this polynomial expression: $2(3x - 2)^2 + 9(3x - 2) - 5$

a. $2(3x - 2)(x + 5)$
b. $2(3x + 2)(x - 5)$
c. $3(x + 1)(6x - 5)$
d. $3(x - 1)(6x + 5)$

____ 24. Factor: $0.5x^2 - 0.02$

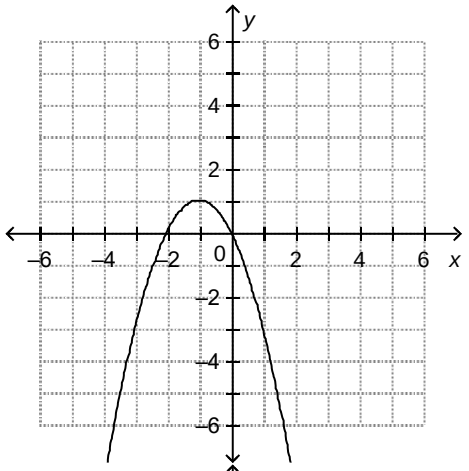
a. $0.5(x + 0.1)(x - 0.1)$
b. $(0.5x + 0.2)(x - 0.2)$
c. $0.5(x + 0.2)(x - 0.2)$
d. $(0.5x + 0.1)(x - 0.1)$

____ 25. For a quadratic function, which characteristic of its graph is equivalent to the zero of the function?

a. minimum point
b. maximum point
c. *y*-intercept
d. *x*-intercept

____ 26. Which graph represents the quadratic function $y = 2x + x^2$?

a.



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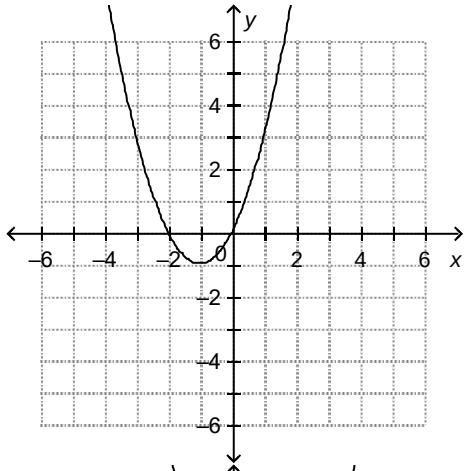

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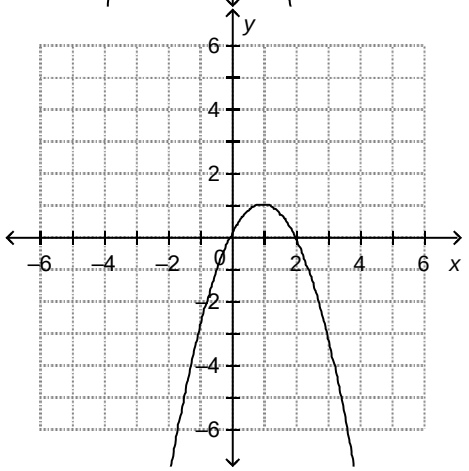

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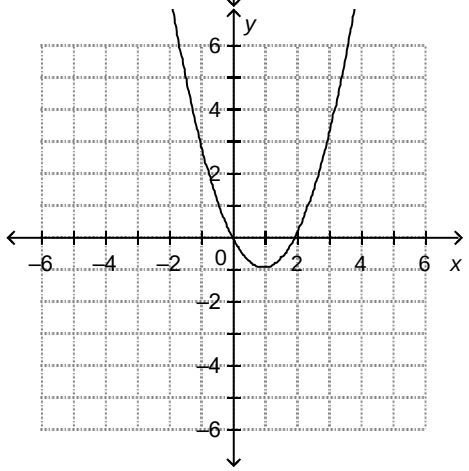
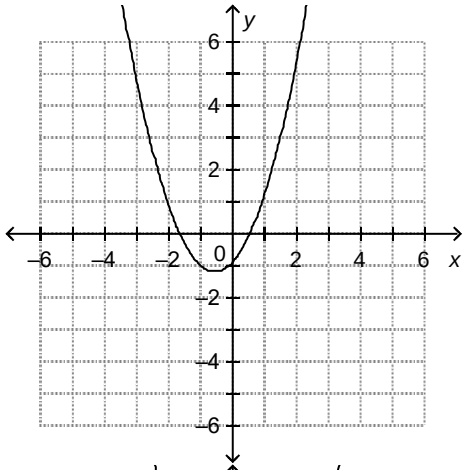


____ 27. Which graph represents the quadratic function $y = x^2 + x - 1$?

a.



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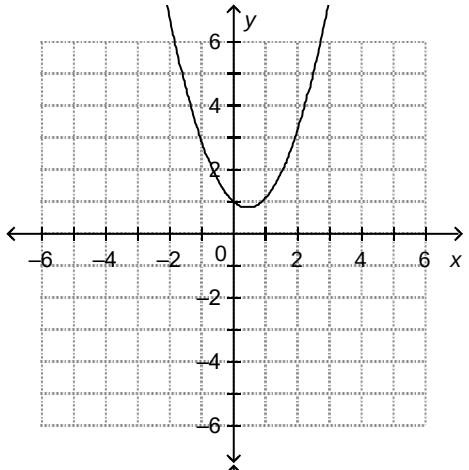

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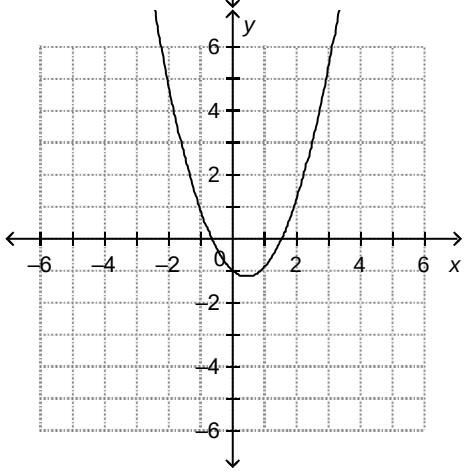
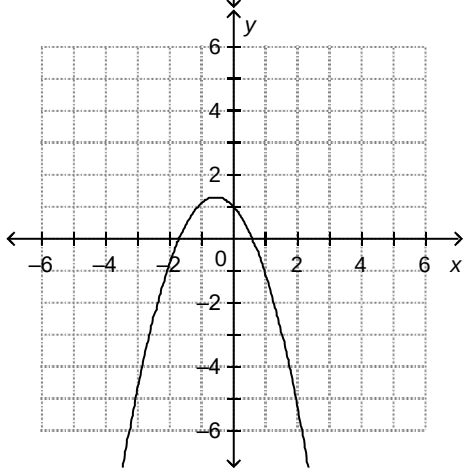
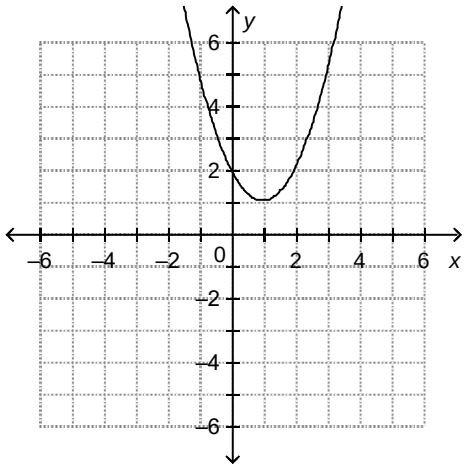


d.



____ 28. What are the coordinates of the vertex of this graph of the quadratic function $y = x^2 - 2x + 2$? State whether it is a maximum point or a minimum point.



a. (1, 2); minimum point
b. (1, 2); maximum point
c. (1, 1); maximum point
d. (1, 1); minimum point

____ 29. Identify the *y*-intercept of the graph of this quadratic function: $y = -3(x + 3)^2 + 4$

a. 13 b. –23 c. –27 d. 23

____ 30. Which of the following describes the translation that would be applied to the graph of $y = x^2$ to get the graph of $y = x^2 + 5$?

a. Translate 5 units left
b. Translate 5 units down
c. Translate 5 units up
d. Translate 5 units right

____ 31. Which statement is NOT true for the graph of $y = x^2 + q$?

a. When *q* is positive, the graph lies above the *x*-axis.
b. As *q* increases, the graph moves up.
c. The graph has the same size and shape as the graph of $y = x^2$.
d. When *q* is negative, the vertex is above the *x*-axis.

____ 32. Which statement is NOT true for the graph of $y = ax^2$?

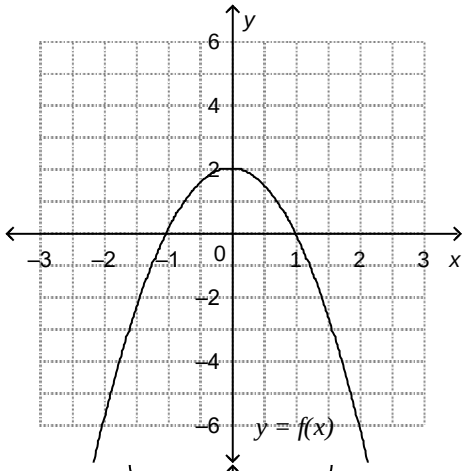
a. The vertex of the graph is always at the origin.
b. When *a* is less than -1, the graph is the image of the graph of $y = x^2$ after a vertical stretch and a reflection in the *x*-axis.
c. When *a* is greater than 1, the graph is the image of the graph of $y = x^2$ after a vertical stretch.
d. When $0 < a < 1$, the graph is the image of the graph of $y = x^2$ after a vertical compression and a reflection in the *x*-axis.

____ 33. Identify the coordinates of the vertex of the graph of this quadratic function: $y = \frac{1}{8}(x - 4)^2 - 4$

a. (4, 4) b. (–4, 4) c. (–4, –4) d. (4, –4)

____ 34. Match the quadratic function $y = 2x^2 + 2$ to a graph below.

a.



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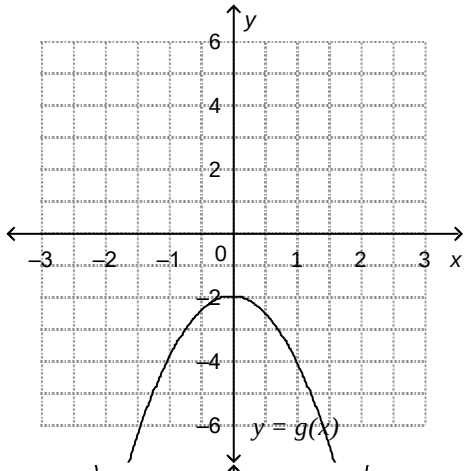
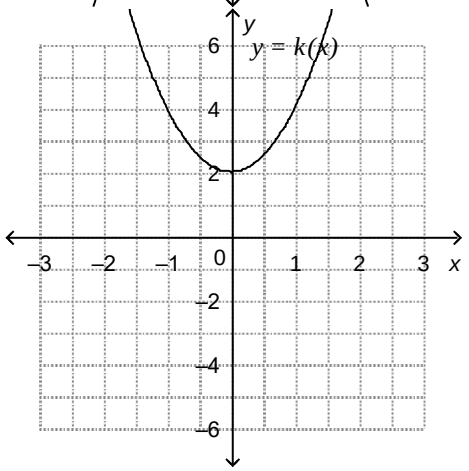
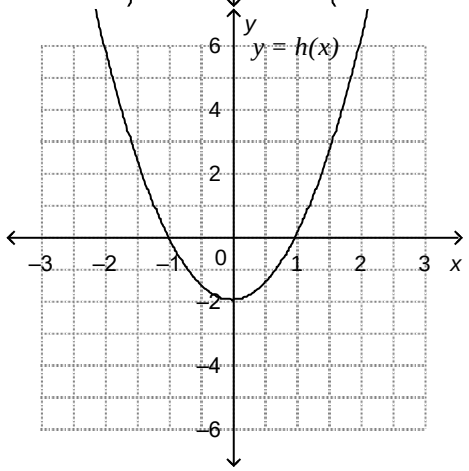


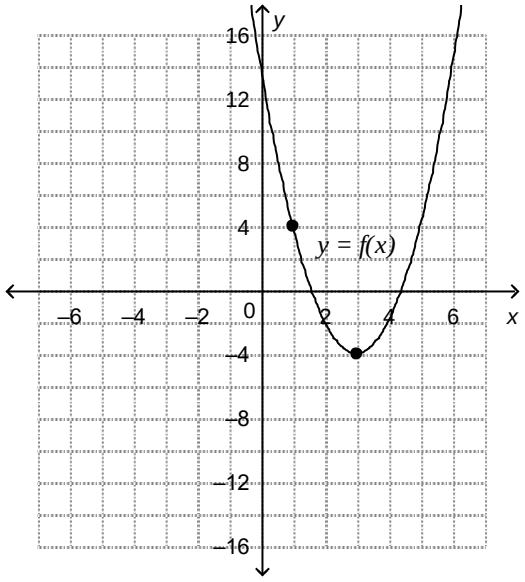
b.



d.



____ 35. Determine an equation of this graph of a quadratic function.



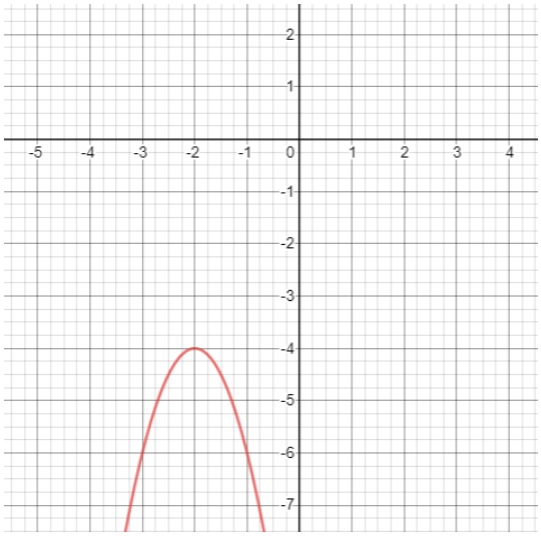
a. $y = 2(x-3)^2 - 4$

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

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

d. $y = -2(x-3)^2 - 4$

____ 36. Determine an equation of this graph of a quadratic function.



a. $y = 2(x+2)^2 - 4$
b. $y = -2(x-2)^2 - 4$
c. $y = -2(x+2)^2$
d. $y = -2(x+2)^2 - 4$

____ 37. Determine an equation of a quadratic function with the given characteristics of its graph: coordinates of the vertex: V(0, 2); passes through A(–2, –18)

a. $y = -2x^2 + 2$
b. $y = -18x^2 - 2$
c. $y = -5x^2 - 2$
d. $y = -5x^2 + 2$

____ 38. Which equation represents the same quadratic function as $y = (x+3)^2 - 1$?

a. $y = x^2 - 6x + 8$
b. $y = x^2 + 8x + 6$
c. $y = x^2 - 2x + 8$
d. $y = x^2 + 6x + 8$

____ 39. Determine the number that would be added to $x^2 + 10x$ to get a perfect square trinomial.

a. 100
b. 10
c. 25
d. 625

____ 40. Write this equation in vertex form: $y = x^2 - 12x + 28$

a. $y = (x-12)^2 + 34$
b. $y = (x-6)^2 + 64$
c. $y = (x-6)^2 - 8$
d. $y = (x-12)^2 - 8$

____ 41. Write this equation in vertex form: $y = -3x^2 + 12x - 16$

a. $y = (x-2)^2 - 4$
b. $y = -3(x+2)^2 + 4$
c. $y = -3(x-2)^2 - 4$
d. $y = -3(x+2)^2 - 4$

____ 42. A sports equipment company sells skates for $65 a pair. At this price, the company sells approximately 200 pairs a week. For every increase in price of x dollars, the company will sell $40x$ fewer pairs. Determine the equation that should be used to maximize the revenue, R dollars.

a. $R = (65+x)(100-40x)$
b. $R = (65+x)(200-20x)$
c. $R = (65-x)(100+40x)$
d. $R = (65+x)(200-40x)$

____ 43. What are the domain and range of $y = 7(x-1)^2 - 9$?

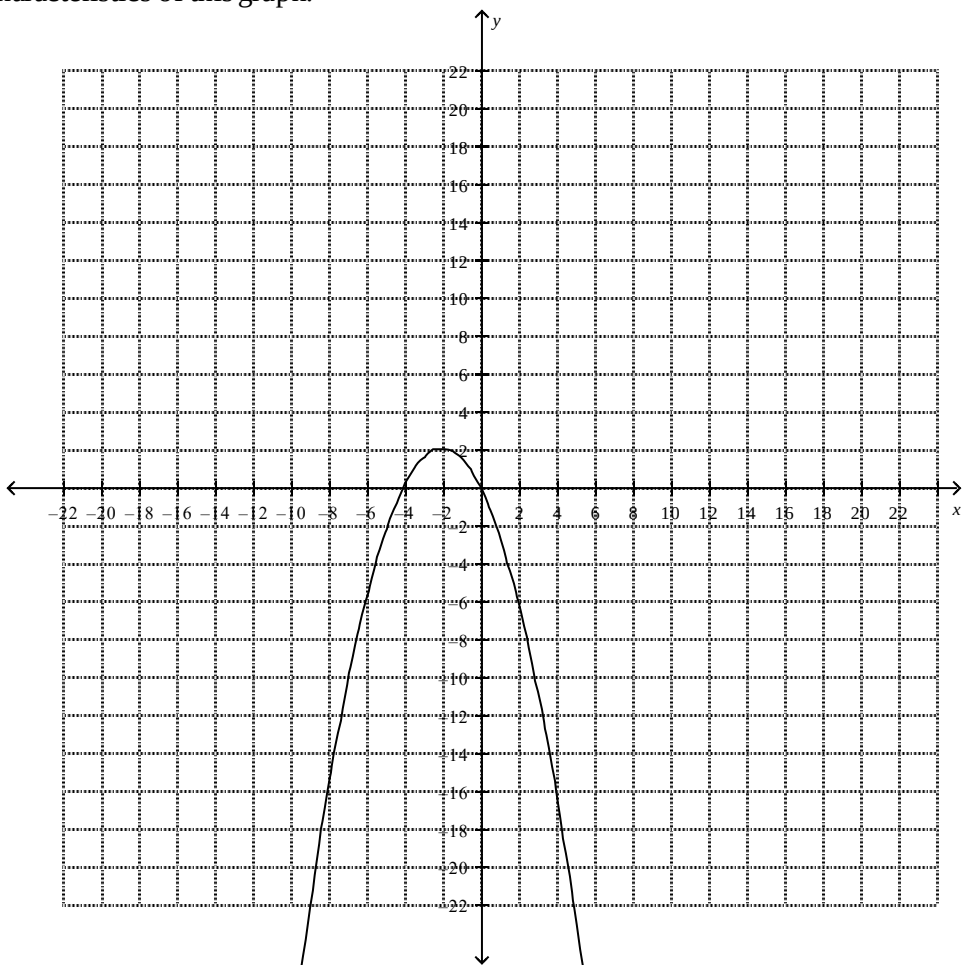
a. Domain: $\{x|x \le -1, x \in R\}$
Range: $\{y|y \in R\}$

b. Domain: $\{x|x \in R\}$
Range: $\{y|y \ge -9, y \in R\}$

c. Domain: $\{x|x \ge 7,\ x \in R\}$
Range: $\{y|y \in R\}$

d. Domain: $\{x|x \in R\}$
Range: $\{y|y \le -1, y \in R\}$

____ 44. Identify the characteristics of this graph.



a. vertex: (–2, 2)
axis of symmetry: $x = 2$
y-intercept: 0
x-intercepts: –0 and 4
opens upward

b. vertex: (–2, 2)
axis of symmetry: $x = -2$
y-intercept: 0
x-intercepts: 0 and –4
opens downward

c. vertex: (2, –2)
axis of symmetry: $x = 2$
y-intercept: 0
x-intercepts: 0 and –4
opens downward

d. vertex: (2, –2)
axis of symmetry: $x = 2$
y-intercept: 0
x-intercepts: 0 and –4
opens upward

____ 45. Identify the *x*-intercepts of the graph of this quadratic function: $y = (x-3)(x+1)$

a. 3 and 1 b. 3 and –1 c. –3 and 1 d. –3 and –1

____ 46. Determine the zeros of this quadratic function: $y = x^2 - 4x - 32$

a. 4 and –8 b. –4 and 8 c. 4 and 8 d. –4 and –8

____ 47. Determine the *x*-intercepts and the coordinates of the vertex of the graph of $y = x^2 - 6x + 8$.

a. 2 and –4; (3, 1)
b. 2 and 4; (3, 1)
c. –2 and 4; (–3, –1)
d. –2 and –4; (–3, 1)

____ 48. Solve the following quadratic equation: $4x^2 - 8x + 3 = 0$

a. $x = -\frac{1}{2}$ and $x = -\frac{3}{2}$
b. $x = \frac{1}{2}$ and $x = \frac{3}{2}$
c $x = \frac{2}{3}$ and $x = 2$
d. $x = -2$ and $x = -6$

____ 49. Solve the following quadratic equation: $8x^2 - 13x - 6 = 0$

a. $x = -\frac{3}{8}$ and $x = 2$
b. $x = -\frac{3}{2}$ and $x = \frac{1}{2}$
c. $x = \frac{3}{8}$ and $x = -2$
d. $x = \frac{1}{4}$ and $x = 3$

____ 50. Solve $(x + 1)^2 = 43$.

a. $1 + \sqrt{43}$ and $1 - \sqrt{43}$
b. $-1 + \sqrt{43}$ and $-1 - \sqrt{43}$
c. $2\sqrt{11}$
d. $\sqrt{42}$

____ 51. Which radical expression simplifies to $2\sqrt{2}$?

a. $\sqrt{4}$ b. $\sqrt{8}$ c. $\sqrt{16}$ d. $\sqrt{9}$

____ 52. Which radical expression simplifies to $9\sqrt{2}$?

a. $\sqrt{32} - \sqrt{8} + 7\sqrt{2}$
b. $\sqrt{32} - 7\sqrt{2} + \sqrt{8}$
c. $\sqrt{32} + 7\sqrt{8} - \sqrt{2}$
d. $\sqrt{2} + 7\sqrt{8} - \sqrt{32}$

____ 53. Simplify by adding or subtracting like terms: $8\sqrt{13} - 7\sqrt{13} + 5\sqrt{13}$

a. $6\sqrt{10}$ b. $\sqrt{78}$ c. $10\sqrt{13}$ d. $6\sqrt{13}$

____ 54. Simplify by adding or subtracting like terms: $\sqrt{9} + \sqrt{125} - \sqrt{81} + \sqrt{3125}$

a. $-8\sqrt{5}$
b. $-8\sqrt{3}$
c. $30\sqrt{3} - 6$
d. $30\sqrt{5} - 6$

____ 55. Expand and simplify this expression: $-\sqrt{2}\left(\sqrt{7} - 5\right)$

a. $-\sqrt{14} + 5\sqrt{2}$
b. $-7\sqrt{2} + \sqrt{10}$
c. $-2\sqrt{7} + 5\sqrt{2}$
d. $\sqrt{14} - \sqrt{10}$

____ 56. Expand and simplify this expression: $\left(\sqrt{7} + 7\right)\left(\sqrt{3} - 2\right)$

a. $\sqrt{21} - 2\sqrt{7} + 7\sqrt{3} - 14$
b. $\sqrt{21} + 3\sqrt{7} + 7\sqrt{3} + \sqrt{49}$
c. $7\sqrt{3} - 2\sqrt{7} + 7\sqrt{7} - 14$
d. $\sqrt{21} - 14\sqrt{7} - 14$

____ 57. Rationalize the denominator: $\frac{7}{7\sqrt{5}}$

a. $\frac{7\sqrt{5}}{35}$ b. $\frac{7\sqrt{5}}{5}$ c. $\frac{35\sqrt{5}}{5}$ d. $\frac{49\sqrt{5}}{7}$

____ 58. Expand and simplify this expression: $\left(\sqrt{5}-3\right)\left(5\sqrt{5}+4\right)-\left(4\sqrt{5}-5\right)^2$

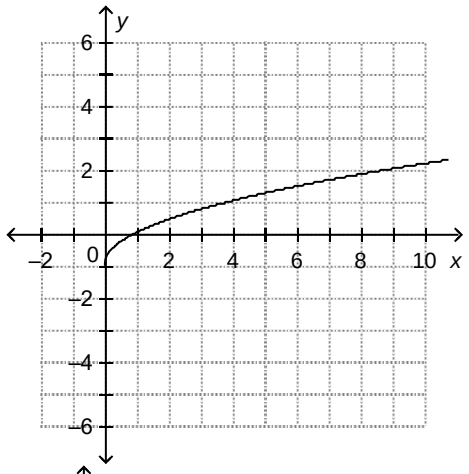
a. $-92+29\sqrt{5}$
b. $-18+31\sqrt{5}$
c. $-18+29\sqrt{5}$
d. $-92+31\sqrt{5}$

____ 59. Simplify this expression: $\frac{-9\sqrt{5}-3}{\sqrt{5}}$

a. $\frac{-9-15\sqrt{5}}{5}$
b. $-225-3\sqrt{5}$
c. $\frac{-45\sqrt{5}-15}{5}$
d. $\frac{-45-3\sqrt{5}}{5}$

____ 60. Which graph is a graph for the radical function: $y = \sqrt{x} - 1$?

a.



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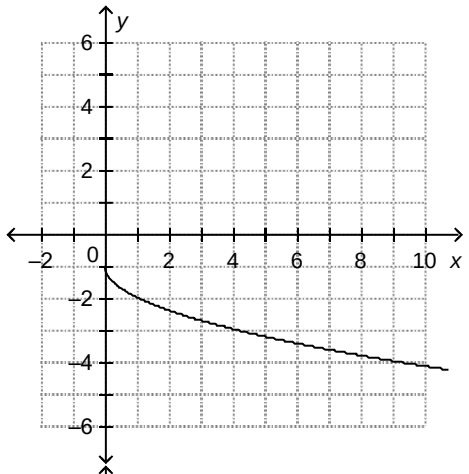

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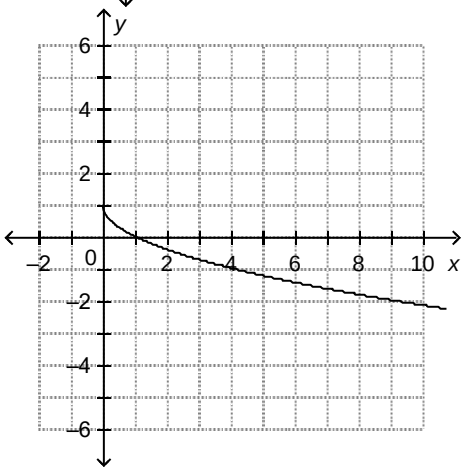

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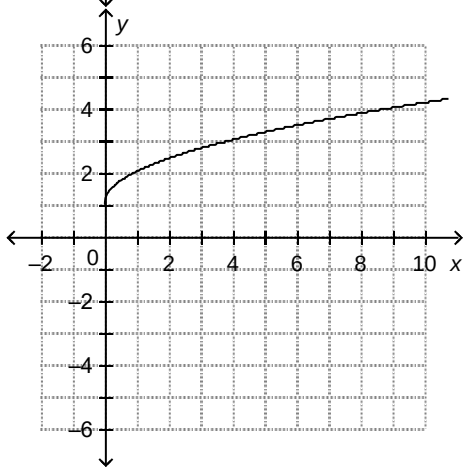
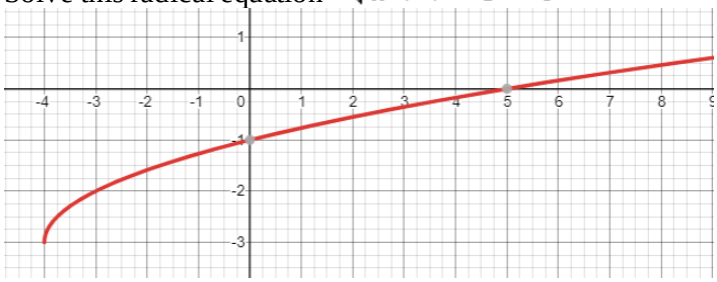


____ 61. Solve this radical equation $\sqrt{x+4} - 3 = 0$



a. $x = 6$ b. $x = -5$ c. $x = 7$ d. $x = 5$

____ 62. Determine two related functions that can be graphed to solve the radical equation: $\sqrt{x+2} - 5x = 10$

a. $y = \sqrt{x+2}$; $y = 5x + 10$
b. $y = -\sqrt{x+2}$; $y = 10 - 5x$
c. $y = -\sqrt{x+2}$; $y = 5x - 10$
d. $y = \sqrt{x+2}$; $y = -5x - 10$

____ 63. Solve this equation: $9\sqrt{x} = 4$

a. $x = \frac{16}{81}$ b. $x = \frac{81}{16}$ c. $x = \frac{4}{9}$ d. $x = \frac{9}{4}$

____ 64. Solve this equation: $\sqrt{x-3} - 7 = -5$

a. $x = 1$ b. $x = 4$ c. $x = 7$ d. $x = 5$

____ 65. Solve this equation: $9 = \sqrt{135 - 6x}$

a. $x = 8$ b. $x = 9$ c. $x = 10$ d. $x = 7$

____ 66. Which of the following are the non-permissible values for this rational expression?

$$\frac{n^2 - 2n - 3}{n^3 - 4n^2 + 3n}$$

a. $n = 0$ and $n = 1$
b. $n = 0$ and $n = -1$
c. $n = 0$, $n = -3$, and $n = -1$
d. $n = 0$, $n = 3$, and $n = 1$

____ 67. Simplify this rational expression and state the non-permissible values of the variable.

$$\frac{m^2 - 16}{m^2 + 6m + 8}$$

a. $\frac{m+4}{m+2}$; $m = -4$ and $m = 2$
b. $\frac{m+4}{m+2}$; $m = -4$ and $m = -2$
c. $\frac{m-4}{m+2}$; $m = 4$ and $m = 2$
d. $\frac{m-4}{m+2}$; $m = -4$ and $m = -2$

____ 68. Simplify this expression:

$$\frac{7}{q} \div \frac{5x}{3q}$$

a. $\frac{21q^2}{5x}$, $x \neq 0$
b. $\frac{21}{5x}$, $q \neq 0$, $x \neq 0$
c. $\frac{35x}{3q^2}$, $q \neq 0$, $x \neq 0$
d. $35x$, $q \neq 0$

____ 69. Simplify this expression:

$\frac{5p}{2} \cdot \frac{4p}{p}$

a. $\frac{9p}{2}, p \neq 0$

b. $10p, p \neq -2$

c. $\frac{5p}{8}, p \neq 0$

d. $10p, p \neq 0$

____ 70. Simplify this expression:

$\frac{2x+4}{x} \div \frac{2}{x-6}$

a. $2x^2 - 8x - 24, x \neq 0, x \neq 6$

b. $\frac{4(x+2)}{x(x-6)}, x \neq 0, x \neq 6$

c. $\frac{(x+2)(x-6)}{x}, x \neq 0, x \neq 6$

d. $\frac{x-12}{x}, x \neq 0, x \neq 6$

____ 71. Simplify.

$\frac{5}{a} + \frac{9}{7}$

a. $\frac{14}{a+7}, a \neq -7$

b. $\frac{9a+35}{a+7}, a \neq -7$

c. $\frac{9a+35}{7a}, a \neq 0$

d. $\frac{14}{7a}, a \neq 0$

____ 72. Simplify.

$\frac{d+5}{d^2} + \frac{2}{d} - 3$

a. $\frac{d+4}{d^2}, d \neq 0$

b. $\frac{-3d^2+3d+5}{2d^2}, d \neq 0$

c. $\frac{-3d^2+3d+5}{d^2}, d \neq 0$

d. $\frac{d+4}{2d^2}, d \neq 0$

____ 73. Simplify.

$pq - \frac{p-q}{p} + \frac{p+q}{q}$

a. $1, p \neq 0, q \neq 0$

b. $\frac{p^2q^2+p^2+q^2}{pq}, p \neq 0, q \neq 0$

c. $\frac{p^2q^2+p^2+q^2+2pq}{pq}, p \neq 0, q \neq 0$

d. $\frac{pq}{p+q}, p \neq 0, q \neq 0$

____ 74. Simplify.

$\frac{r+6}{r-2} + \frac{4}{2-r}$

a. $\frac{r+10}{r-2}, r \neq 2$

b. $\frac{r+2}{(r-2)^2}, r \neq 2$

c. $\frac{r+10}{(r-2)^2}, r \neq 2$

d. $\frac{r+2}{r-2}, r \neq 2$

____ 75. Simplify.

$\frac{x-2}{x+6}+\frac{x+4}{x-1}$

a. $\frac{2x^2+7x+26}{x+5}, x \neq -6, x \neq 1, x \neq -5$

b. $\frac{x+2}{x+5}, x \neq -6, x \neq 1, x \neq -5$

c. $\frac{2x^2+7x+26}{(x+6)(x-1)}, x \neq -6, x \neq 1$

d. $\frac{x+2}{(x+6)(x-1)}, x \neq -6, x \neq 1$

____ 76. Simplify.

$\frac{a}{a^2-144}-\frac{3a-1}{a^2+10a-24}$

a. $\frac{-2a^2+35a-12}{(a+12)(a-12)(a-2)}, a \neq 12, a \neq -12, a \neq 2$

b. $\frac{3a^2-a}{-10a-120}, a \neq 120$

c. $\frac{-2a+1}{-10(a+12)}, a \neq -12$

d. $\frac{-2a+1}{(a+12)(a-12)(a-2)}, a \neq 12, a \neq -12, a \neq 2$

____ 77. Solve.

$\frac{16}{n}=\frac{n}{9}$

a. $n=\frac{9}{16}$

b. $n = 12$ or $n = -12$

c. $n = 144$ or $n = -144$

d. $n=\frac{16}{9}$

____ 78. Solve.

$\frac{w-5}{w^2}=\frac{1}{20}$

a. $w = 10$

b. $w = 10$ or $w = -10$

c. $w = -5$

d. no solution

____ 79. Simplify: $\frac{\frac{3}{4}+2x}{\frac{3}{4}-2x}$

a. $\frac{3-16x}{3+8x}$

b. -1

c. $-\frac{3}{16x}$

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

____ 80. Solve.

$$\frac{25}{w-6} = \frac{w-6}{w}$$

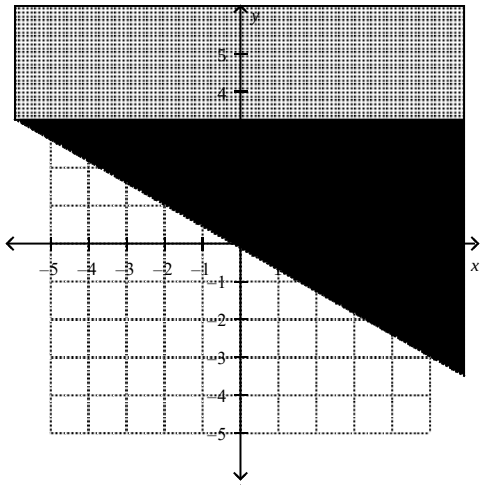
a. $w = 1$ or $w = -36$
c. $w = 1$ or $w = 36$
b. $w = -1$ or $w = 36$
d. no solution

____ 81. A freight train travels 60 km. A single locomotive pulls the train for the first half of the trip, then a second locomotive is added, doubling the speed of the train. If the total time for the trip is 54 min, what is the speed of the train with one locomotive?

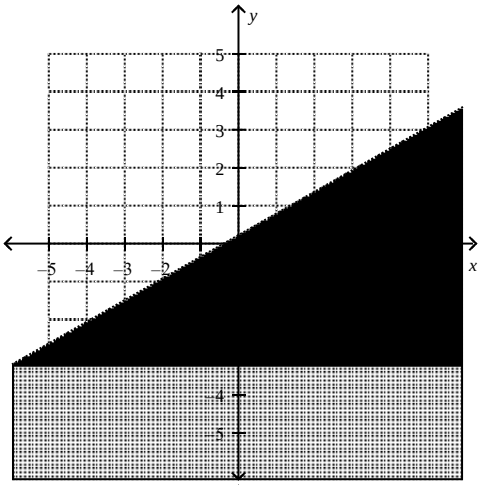
a. 267 km/h
b. 133 km/h
c. 233 km/h
d. 50 km/h

____ 82. The graph of $-4x + 7y > 1$ is

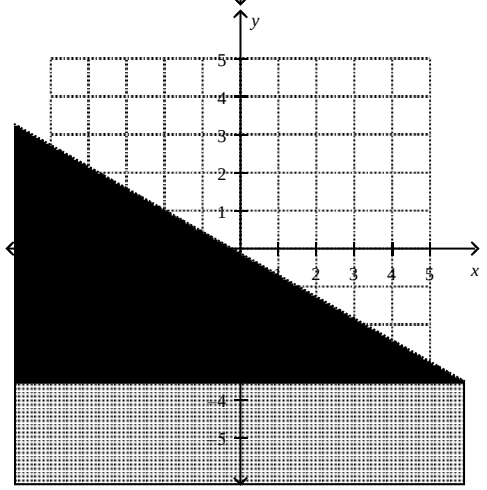
a.



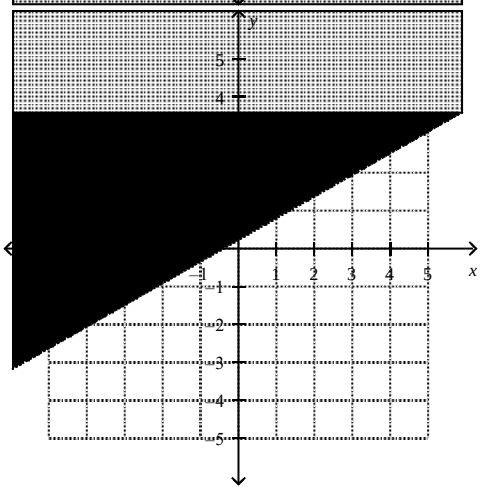
c.



b.



d.



____ 83. Solve the linear inequality: $\frac{2}{3}x + 1 \geq 0$

a. $x < -1.5$
b. $x \geq -1.5$
c. $x \geq 1.5$
d. $x < 1$

____ 84. Which interval below is the solution of the inequality $4 + \frac{3}{4}x < 10$?

a. $x < 8$ b. $x > 8$ c. $x < -8$ d. $x > -8$

____ 85. Which interval below is the solution of the inequality $3 + x \leq 6$?

a. $[3, \infty)$ b. $[-\infty, -3)$ c. $(-\infty, 2]$ d. $(-\infty, 3]$

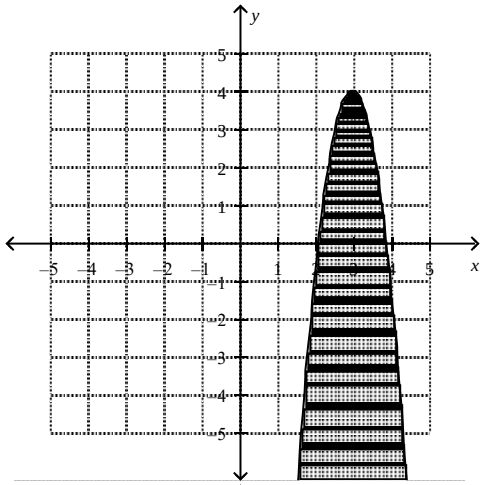
____ 86. Solve the linear inequality $13x - 11 < 13 + 14x$. Write the solution in interval notation.

a. $x > -24$; $(-24, \infty)$ c. $x > 8$; $(8, \infty)$

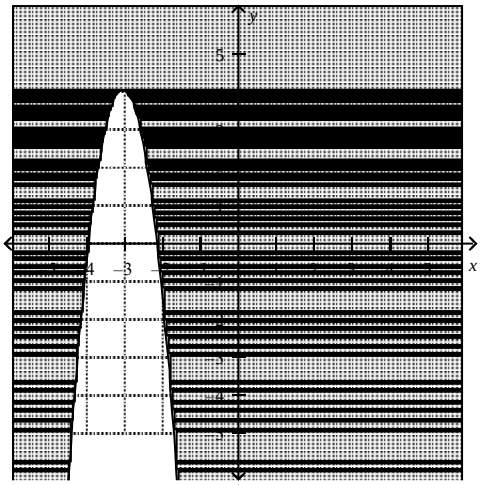
b. $x < -3$; $(-\infty, -3)$ d. $x < -24$; $(-\infty, -24)$

____ 87. Which graph represents the solution to the inequality $y \leq -5(x+3)^2 + 4$?

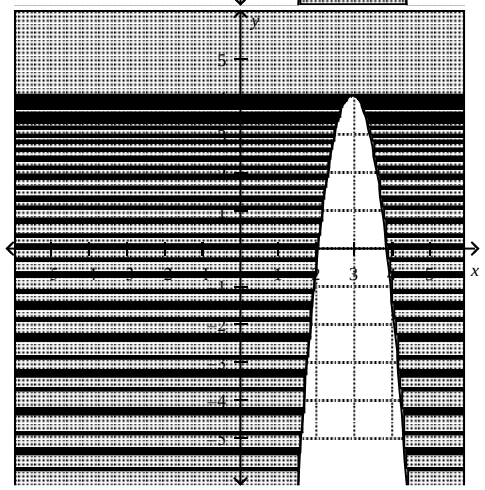
a.



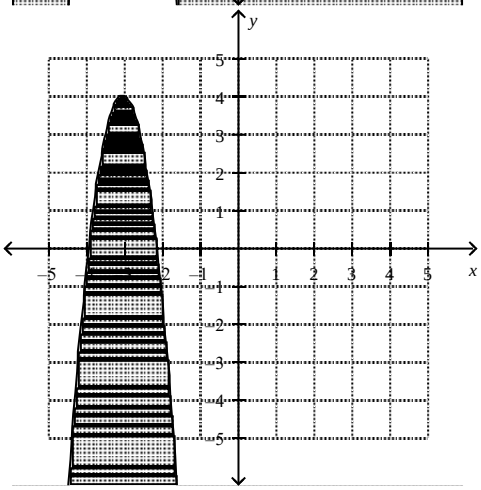
c.



b.



d.



____ 88. Which point does *not* satisfy the inequality $y > -2(x-3)^2 + 8$?

a. $(-9, -234)$ c. $(5, 16)$

b. $(1, 1)$ d. $(2, 0)$

____ 89. Solve the quadratic inequality: $x^2 - 2x \geq 3$

a. $-3 \leq x \leq 1$
b. $x \leq -1$ or $x \geq 3$
c. $x \leq 3$ or $x \geq 1$
d. $-3 \leq x \leq -1$

____ 90. The solution set to the inequality $-3x^2 \leq -9x + 6$ is

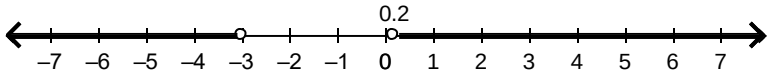
a. $\{x | 1 \leq x \leq 2, x \in R\}$
b. $\{x | -2 \leq x \leq -1, x \in R\}$
c. $\{x | x \leq -2 \text{ or } x \geq -1, x \in R\}$
d. $\{x | x \leq 1 \text{ or } x \geq 2, x \in R\}$

____ 91. Which interval below is the solution of the inequality $x^2 - x - 90 > 0$?

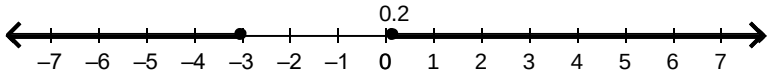
a. $(-\infty, -9)$ or $(10, \infty)$
b. $[9, 10]$
c. $(-\infty, -10]$ or $[9, \infty)$
d. $(-9, 10]$

____ 92. Solve the quadratic inequality $5x^2 + 14x - 3 \geq 0$ algebraically. Write the solution in interval notation. Show the solution on a number line.

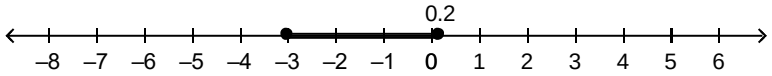
a. $x < -3$ or $x > 0.2$; $(-\infty, -3)$ or $(0.2, \infty)$



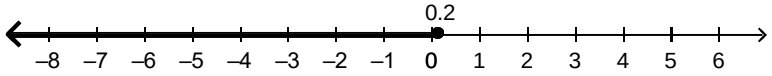
b. $x \leq -3$ or $x \geq 0.2$; $(-\infty, -3]$ or $[0.2, \infty)$



c. $-3 \leq x \leq 0.2$; $[-3, 0.2]$



d. $x \leq 0.2$; $(-\infty, 0.2]$



____ 93. Point P(7, 9) is on the terminal arm of an angle θ in standard position. Determine the measure of θ to the nearest degree.

a. $\theta = 63°$
b. $\theta = 38°$
c. $\theta = 52°$
d. $\theta = 33°$

____ 94. An angle θ has its terminal arm in Quadrant 2. Which primary trigonometric ratio is greater than 0?

a. cos θ
b. tan θ
c. sin θ
d. all 3 ratios

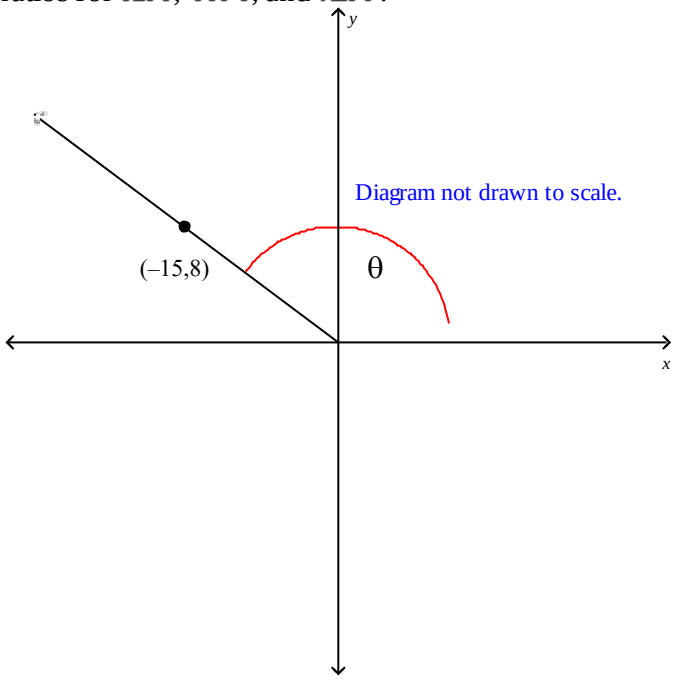
____ 95. Determine the reference angle for the angle 290° in standard position.

a. 110°
b. 20°
c. 290°
d. 70°

____ 96. What are the three other angles in standard position that have a reference angle of 54°?

a. 99°, 144°, 234°
c. 144°, 234°, 324°
b. 108°, 162°, 216°
d. 126°, 234°, 306°

____ 97. The coordinates of a point P on the terminal arm of an angle are shown. What are the exact trigonometric ratios for $\sin\theta$, $\cos\theta$, and $\tan\theta$?



a. $\sin A = \frac{8}{17},\ \cos A = -\frac{15}{17},\ \tan A = -\frac{8}{15}$

b. $\sin A = -\frac{15}{17},\ \cos A = \frac{8}{17},\ \tan A = -\frac{15}{8}$

c. $\sin A = \frac{15}{17},\ \cos A = -\frac{8}{17},\ \tan A = -\frac{8}{15}$

d. $\sin A = \frac{17}{8},\ \cos A = -\frac{17}{15},\ \tan A = -\frac{8}{15}$

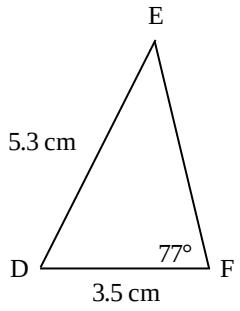
____ 98. Which angle is NOT coterminal with an angle of $190°$ in standard position?

a. –170°
b. –530°
c. 370°
d. 550°

____ 99. Which expression represents the measures of all the angles coterminal with an angle of $203°$ in standard position?

a. $23° + k360°, k \in I$
c. $203° + k180°, k \in I$
b. $203° + k360°, k \in R$
d. $203° + k360°, k \in I$

____ 100. For ΔDEF, write the Sine Law equation you would use to determine the measure of ∠E.



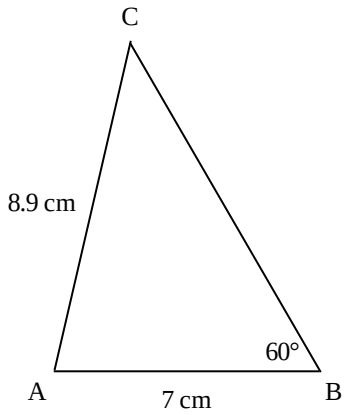
a. $\frac{3.5}{\sin E} = \frac{5.3}{\sin 63°}$

b. $\frac{\sin E}{3.5} = \frac{\sin 63°}{5.3}$

c. $\frac{\sin E}{3.5} = \frac{\sin 77°}{5.3}$

d. $\frac{3.5}{\sin E} = \frac{\sin 77°}{5.3}$

____ 101. For ΔABC, determine the measure of ∠A to the nearest degree.



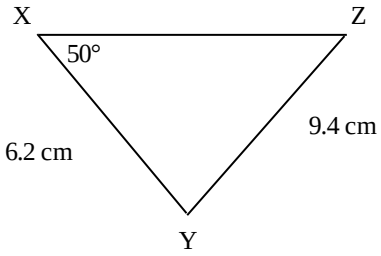
a. 120°

b. 77°

c. 43°

d. 144°

____ 102. For ΔXYZ, determine the measure of ∠Z to the nearest degree and the measure of XZ to the nearest tenth of a centimetre.



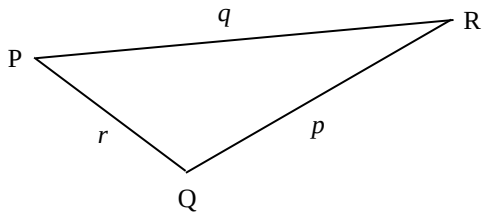
a. ∠Z = 28°; XZ = 7.3 cm

b. ∠Z = 59°; XZ = 4.8 cm

c. ∠Z = 53°; XZ = 8.0 cm

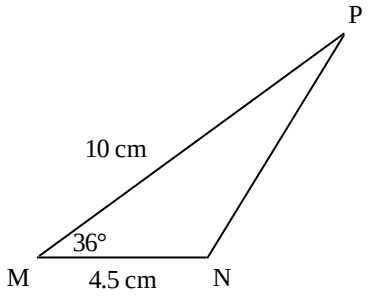
d. ∠Z = 30°; XZ = 12.1 cm

____ 103. For ΔPQR, write the Cosine Law equation you would use to determine the measure of ∠Q.



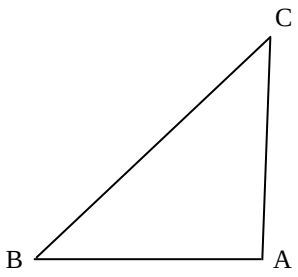
a. $r^2 = p^2 + q^2 - 2pq \cos R$
b. $r^2 = p^2 + q^2 - 2pq \cos Q$
c. $q^2 = p^2 + r^2 - 2pr \cos Q$
d. $p^2 = q^2 + r^2 - 2qr \cos P$

____ 104. In ΔPMN, determine the length of PN to the nearest tenth of a centimetre.



a. 13.9 cm
b. 47.4 cm
c. 9.2 cm
d. 6.9 cm

____ 105. In ΔABC, AB = 6 cm, BC = 8.5 cm, and AC = 5.8 cm. Determine the measure of ∠B to the nearest degree.



a. 28°
b. 91°
c. 43°
d. 0°