

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

Solve.

1) A boat can travel on a river 17 miles upstream in the same time it takes to travel 23 miles downstream. Find the speed of the current if the speed of the boat in still water is 20 miles per hour.

A) 60 mph

B) 5 mph

C) 3 mph

D) 4 mph

Perform the indicated operation. Write the result in the form $a + bi$.

2) $\frac{28 - 3i}{2 - 3i}$

A) $6 - 5i$

B) $6 + 5i$

C) $5 - 6i$

D) $5 + 6i$

Model the problem with a linear equation.

3) When making a telephone call using a calling card, a call lasting 5 minutes cost \$0.90. A call lasting 15 minutes cost \$1.90. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of a making a call lasting x minutes.

A) $y = -0.1x + 1.4$

B) $y = 10x - \frac{491}{10}$

C) $y = 0.1x - 13.1$

D) $y = 0.1x + 0.4$

Divide.

4) $(-10x^3 - 31x^2 - 40x - 15) \div (5x + 3)$

A) $-2x^2 - 5$

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

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

D) $x^2 - 5x - 5$

Find the center and the radius of the circle.

5) $x^2 + y^2 - 18x - 4y + 85 = 36$

A) $(9, 2), r = 6$

B) $(-2, -9), r = 36$

C) $(2, 9), r = 6$

D) $(-9, -2), r = 36$

Divide. Simplify the answer.

6) $\frac{3p-3}{p} \div \frac{8p-8}{3p^2}$

A) $\frac{9p}{8}$

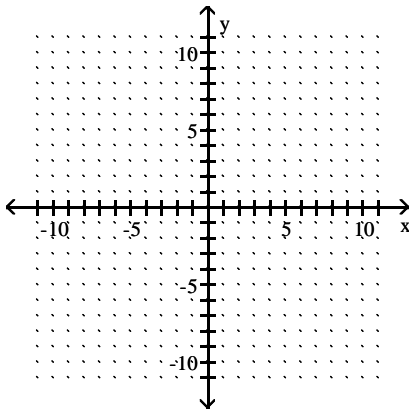
B) $\frac{24p^2 + 48p + 24}{3p^3}$

C) $\frac{8}{9p}$

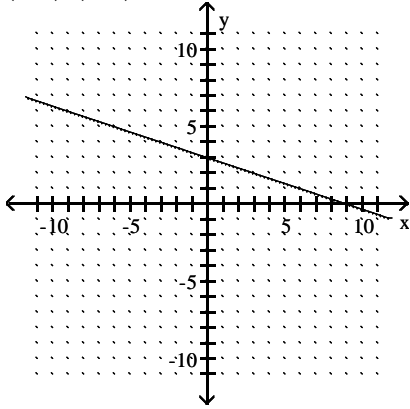
D) $\frac{9p^3 - 9p^2}{8p^2 - 8p}$

Graph the linear function by finding x- and y-intercepts.

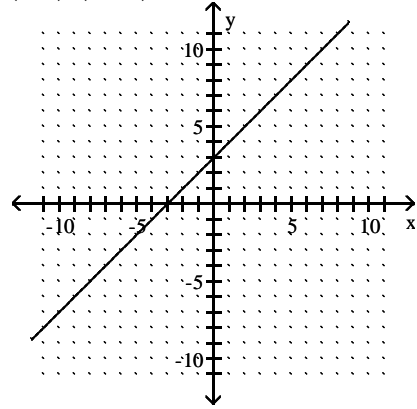
7) $y + \frac{1}{3}x = 3$



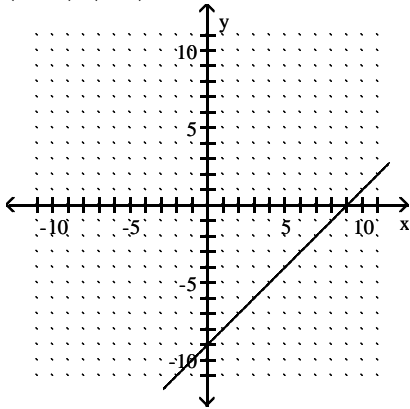
A) $(0, 3), (9, 0)$



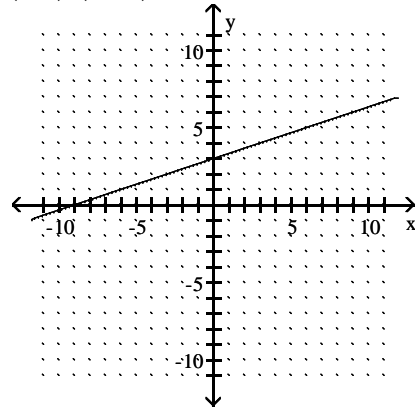
B) $(0, 3), (-3, 0)$



C) $(0, -9), (9, 0)$



D) $(0, 3), (-9, 0)$



Factor the polynomial.

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

A) prime polynomial

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

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

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

Perform the indicated operations. If possible, simplify your answer.

$$9) \frac{x}{x^2 - 25} + \frac{5}{x + 5} - \frac{6}{x}$$

$$A) \frac{-25(x - 6)}{x(x + 5)(x - 5)}$$

$$B) \frac{25(x + 6)}{x(x + 5)(x - 5)}$$

$$C) \frac{25(x - 6)}{(x + 5)(x - 5)}$$

$$D) \frac{6x^2 - 25x + 150}{x(x + 5)(x - 5)}$$

Solve the system of equations.

$$10) \begin{cases} 5x - 2y = -1 \\ 7x + 4y = 53 \end{cases}$$

$$A) (3, 8)$$

$$B) (2, 9)$$

$$C) (3, 9)$$

$$D) (2, 8)$$

Factor the polynomial.

11) $27c^3 + 512$

A) $(3c + 8)(9c^2 + 64)$

B) $(3c + 8)(9c^2 - 24c + 64)$

C) $(27c + 8)(c^2 - 24c + 64)$

D) $(3c - 8)(9c^2 + 24c + 64)$

Solve the equation for the specified variable.

12) The simple interest formula: $P = \frac{A}{1 + rt}$ for t

A) $t = \frac{A - P}{Pr}$

B) $t = \frac{P - 1}{Ar}$

C) $t = P - rA$

D) $t = \frac{P - A}{1 + r}$

Use the properties of exponents to simplify the expression. Write with positive exponents.

13) $\frac{(-3x^{1/7})^4}{x^{-1/3}}$

A) $81x^{19/21}$

B) $-3x^{5/21}$

C) $-3x^{19/21}$

D) $81x^{5/21}$

Write the standard form of the equation.

14) Through $(-4, 6)$, perpendicular to $8x + 7y = 10$

A) $7x - 8y = -76$

B) $8x - 7y = -76$

C) $7x + 8y = -76$

D) $7x - 8y = 1$

Use the quadratic formula to solve the equation.

15) $6x^2 = -16x - 5$

A) $\frac{-8 - \sqrt{94}}{6}, \frac{-8 + \sqrt{94}}{6}$

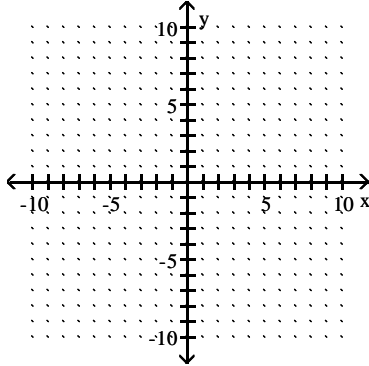
C) $\frac{-8 - \sqrt{34}}{6}, \frac{-8 + \sqrt{34}}{6}$

B) $\frac{-16 - \sqrt{34}}{6}, \frac{-16 + \sqrt{34}}{6}$

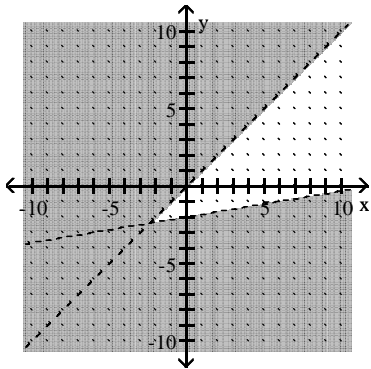
D) $\frac{-8 - \sqrt{34}}{12}, \frac{-8 + \sqrt{34}}{12}$

Graph the inequality.

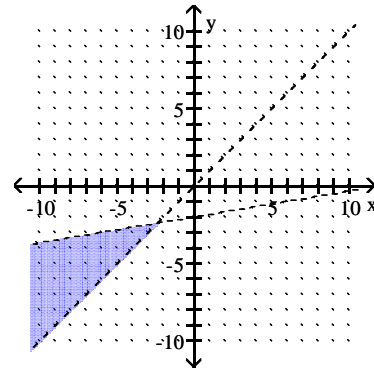
16) The intersection of $y < x$ and $-1x + 6y > -12$



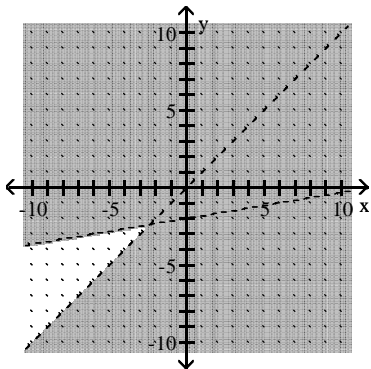
A)



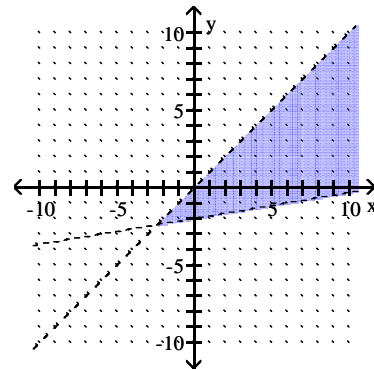
B)



C)

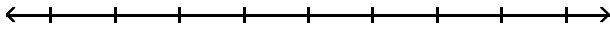


D)

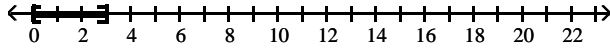


Solve the inequality. Graph the solution set.

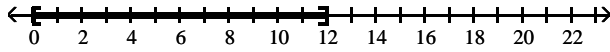
17) $|h - 6| - 3 \leq 3$



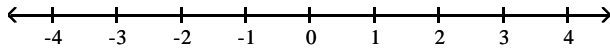
A) $[0, 3]$



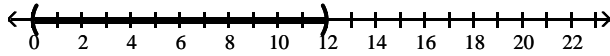
B) $[0, 12]$



C) $\{\}$



D) $(12, 0)$



Simplify the complex fraction.

$$18) \frac{9 + \frac{3}{x}}{\frac{x}{4} + \frac{1}{12}}$$

A) $\frac{x}{36}$

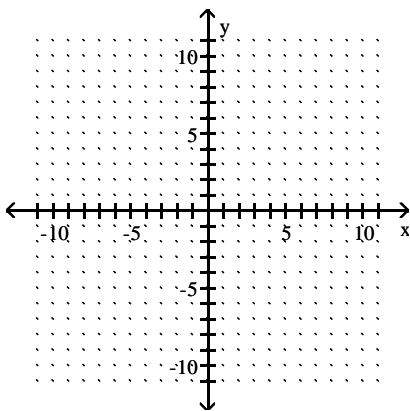
B) 1

C) $\frac{36}{x}$

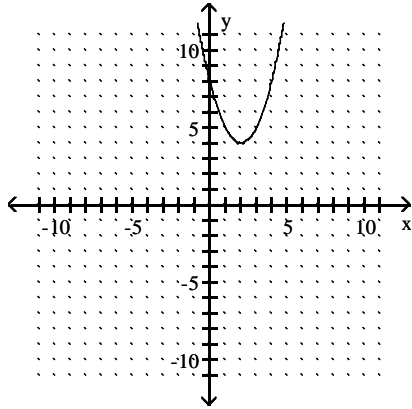
D) 36

Sketch the graph of the quadratic function. Give the vertex and axis of symmetry.

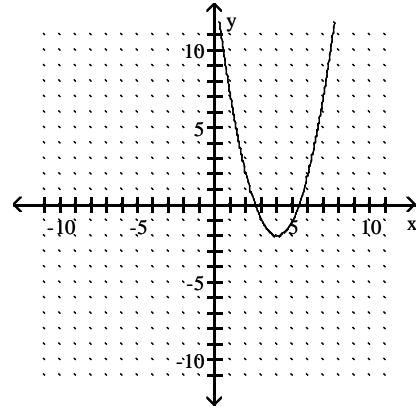
$$19) f(x) = (x + 4)^2 - 2$$



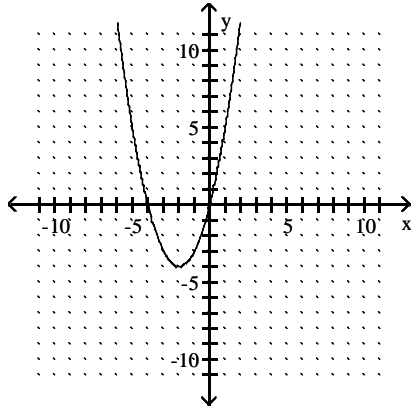
A) Vertex $(2, 4)$, $x = 2$



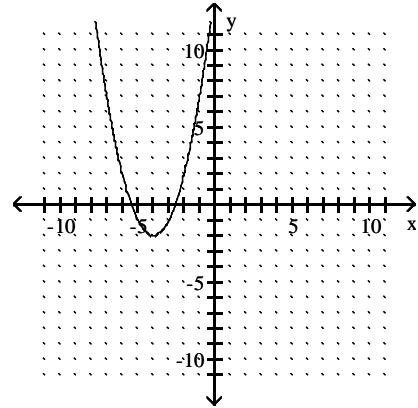
B) Vertex $(4, -2)$, $x = 4$



C) Vertex $(-2, -4)$, $x = -2$



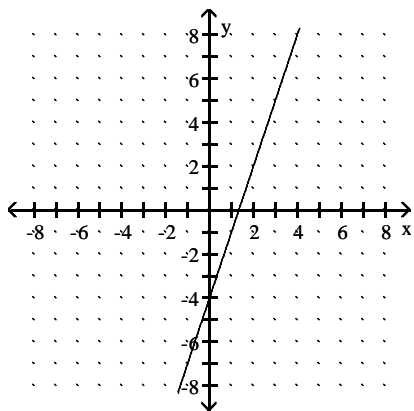
D) Vertex $(-4, -2)$, $x = -4$



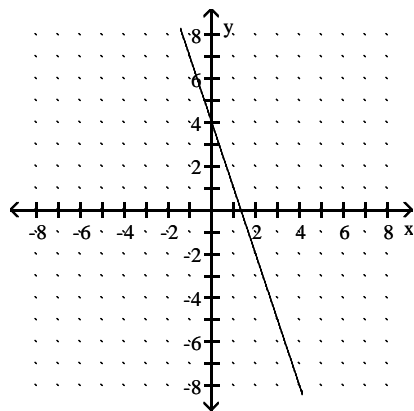
Match the equation with its graph.

20) $f(x) = -3x + 4$

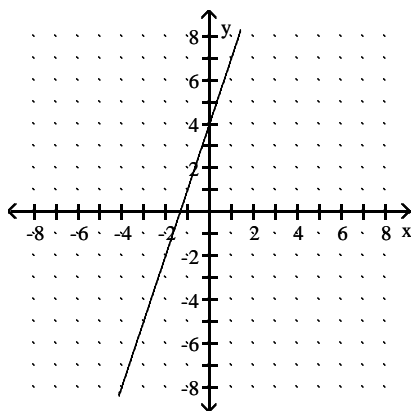
A)



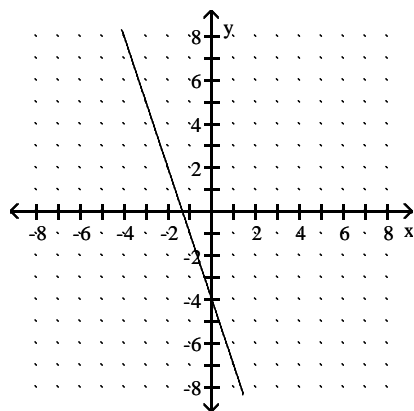
B)



C)



D)



Solve.

21) The cost in millions of dollars for a company to manufacture x thousand automobiles is given by the function $C(x) = 5x^2 - 40x + 144$. Find the number of automobiles that must be produced to minimize the cost.

A) 64 thousand automobiles

B) 8 thousand automobiles

C) 20 thousand automobiles

D) 4 thousand automobiles

Express as a single logarithm.

22) $5 \log_b m - \log_b n$

A) $\log_b m^5 \div \log_b n$

B) $\log_b \frac{m^5}{n}$

C) $\log_b (m^5 - n)$

D) $\log_b \frac{5m}{n}$

Solve the equation.

23) $x(4x + 16) = 0$

A) $\{0, 4\}$

B) $\left\{0, -\frac{1}{4}\right\}$

C) $\left\{0, \frac{1}{4}\right\}$

D) $\{0, -4\}$

Find the domain and range.

24) $\{(12,-2), (-5,-5), (11,2), (11,-6)\}$

A) domain = $\{11, 12, -5, -11\}$; range = $\{2, -2, -5, -6\}$

B) domain = $\{2, -2, -5, -6\}$; range = $\{11, 12, -5\}$

C) domain = $\{11, 12, -5\}$; range = $\{2, -2, -5, -6\}$

D) domain = $\{11, 12, -5, 21\}$; range = $\{2, -2, -5, -6\}$

Rationalize the denominator. Assume all variables represent positive real numbers.

$$25) \frac{1 + \sqrt{10}}{1 - \sqrt{10}}$$

A) 1

B) $\frac{-9 - 2\sqrt{10}}{11}$

C) $\frac{11 + 2\sqrt{10}}{-9}$

D) $\frac{11 - 2\sqrt{10}}{-9}$

Solve.

$$26) \sqrt{2x + 3} = 6 - x$$

A) 3

B) 3, 11

C) $-1 + \sqrt{67}, -1 - \sqrt{67}$

D) no solution

27) A certain store has a fax machine available for use by its customers. The store charges \$1.55 to send the first page and \$0.45 for each subsequent page. Use an inequality to find the maximum number of pages that can be faxed for \$7.85

A) at most 14 pages

B) at most 17 pages

C) at most 5 pages

D) at most 45 pages

28) A rectangular sign must have an area of 40 square yards. Its length must be 4 yards more than its width. Find the dimensions of the sign to the nearest hundredth.

A) 4.48 yards
8.48 yards

B) 8.63 yards
12.63 yards

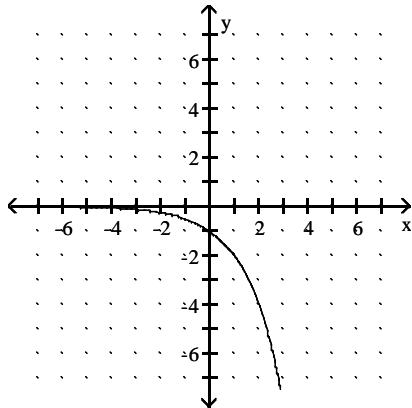
C) 18.52 yards
4.63 yards

D) 4.63 yards
8.63 yards

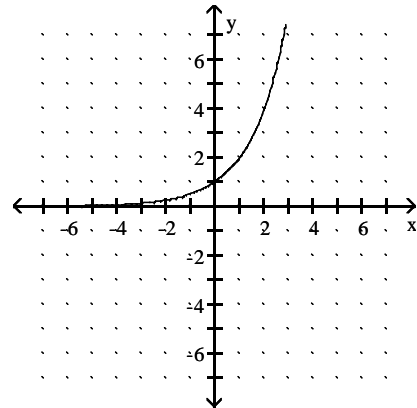
Match the exponential function to the graph.

29) $f(x) = 2^x$

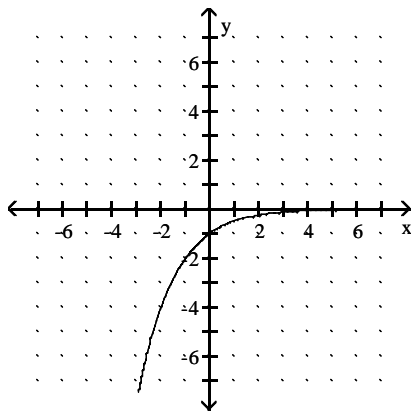
A)



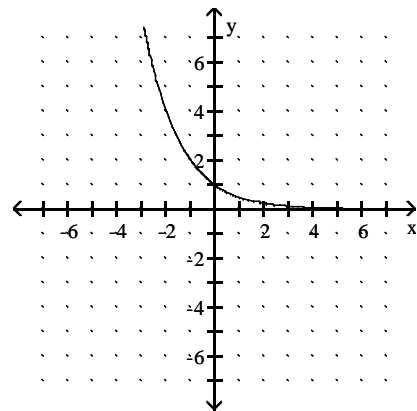
B)



C)



D)



Solve the system for the variable x.

$$x - y + z = 4$$

30) $x + y + z = -4$

$$x + y - z = -8$$

A) no solution

B) $x = -4$

C) $x = 2$

D) $x = -2$

Answer Key

Testname: FINAL_BF02

- 1) C
- 2) D
- 3) D
- 4) C
- 5) A
- 6) A
- 7) A
- 8) D
- 9) A
- 10) A
- 11) B
- 12) A
- 13) A
- 14) A
- 15) C
- 16) D
- 17) B
- 18) C
- 19) D
- 20) B
- 21) D
- 22) B
- 23) D
- 24) C
- 25) C
- 26) A
- 27) A
- 28) D
- 29) B
- 30) D