

# Final Form A

Name \_\_\_\_\_

## Standard 1

1. Simplify the expression.

$$(3yz^6)^2(yz)^4$$

[A]  $9y^6z^{16}$

[B]  $9y^6z^{10}$

[C]  $3y^6z^{16}$

[D]  $3y^3z^{16}$

4. Subtract the polynomials.

$$(x^2 - 4x + 3) - (-7x^2 + x - 8)$$

[A]  $8x^2 - 5x - 5$

[B]  $8x^2 - 3x - 5$

[C]  $8x^2 - 5x + 11$

[D]  $8x^2 + 5x + 11$

## Standard 4

5. Simplify the expression.

$$5 - 6(2 + x) + 2x$$

[A]  $-4x - 7$

[B]  $-2 + x$

[C]  $-- 2x$

[D]  $-4x - 17$

## Standard 2

2. Simplify the expression.

$$\frac{-12x^6y^4}{-2x^3y^6}$$

[A]  $-\frac{3x^9}{y^{10}}$

[B]  $\frac{6x^3}{y^2}$

[C]  $-\frac{6x^3}{y^2}$

[D]  $\frac{3x^9}{y^{10}}$

6. Write as a polynomial in standard form.

$$(2x + 5y)^2$$

[A]  $4x^2 + 10xy + 25y^2$

[B]  $4x^2 + 25y^2$

[C]  $4x^2 + 14xy + 25y^2$

[D]  $4x^2 + 20xy + 25y^2$

## Standard 3

3. Use a vertical or horizontal format to add or subtract.

$$(-3x^2 - 3x^3 - 5) + (-5x^3 + 5 + 9x^2)$$

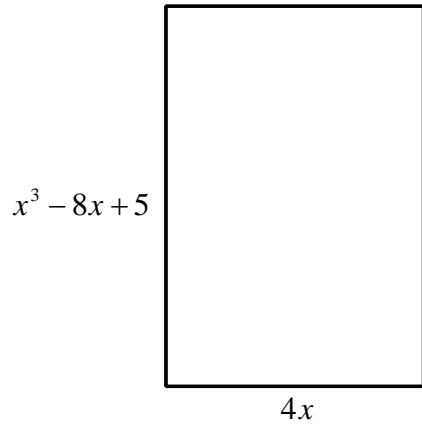
[A]  $-8x^3 + 6x^2 - 10$

[B]  $-8x^3 + 2x^2 + 4$

[C]  $-8x^3 + 6x^2$

[D]  $-8x^3 + 2x^2$

7. Write a polynomial for the area of the rectangle.



Factor:

10.  $9x^2 + 2 + 9x$

[A]  $(3x + 2)(3x + 1)$  [B]  $(3x - 2)(3x - 1)$

[C]  $(3x + 2)(3x - 1)$  [D]  $(3x - 2)(3x + 1)$

11.  $25x^2 - 49y^2$

[A]  $(5x - 7y)^2$  [B]  $(5x + 7y)(5x - 7y)$

[C]  $(5x + 7)(5x - 7)$  [D]  $(5x + 7y)^2$

**Standard 5**

8. Factor:  $6x^3 - 4x^6$

[A]  $2(3x^3 - 2x^6)$  [B]  $x^3(6 - 4x^3)$

[C]  $2x^3(3 - 2x^3)$  [D]  $2x^2(3x - 2x^5)$

9. Factor the expression.

$x^2 + 4x + 3$

[A]  $(x - 1)(x + 3)$  [B]  $(x + 1)(x + 3)$

[C]  $(x - 1)(x - 3)$  [D]  $(x + 1)(x - 3)$

12.  $\frac{4}{81}x^2 - \frac{1}{100}$

[A]  $\left(\frac{2}{9}x - \frac{1}{10}\right)\left(\frac{2}{9}x + \frac{1}{10}\right)$

[B]  $\left(\frac{2}{41}x - \frac{1}{50}\right)\left(\frac{2}{41}x + \frac{1}{50}\right)$

[C]  $\left(\frac{2}{9}x - \frac{1}{10}\right)\left(\frac{2}{9}x - \frac{1}{10}\right)$

[D]  $\left(\frac{2}{41}x - \frac{1}{50}\right)\left(\frac{2}{41}x - \frac{1}{50}\right)$

**Standard 6**

13. Simplify:  $\frac{x-2}{3x-2y} \cdot \frac{9x^2-4y^2}{4x^2-7x-2}$

[A]  $\frac{3x-2y}{5x-7}$

[B]  $\frac{3x^2+2y^2}{4x+1}$

[C]  $\frac{3x+2y}{5}$

[D]  $\frac{3x+2y}{4x+1}$

14. Which of the following should be the result of the first step in reducing the expression

$$\frac{3a^2-6b}{9x^2+18y} ?$$

[A]  $\frac{-3a^2b}{9x^2+18y}$

[B]  $\frac{3a^2-6b}{27x^2y}$

[C]  $\frac{9a^2-6b}{81x^2+18y}$

[D]  $\frac{3(a^2-2b)}{9(x^2+2y)}$

Divide:

15.  $\frac{x^2-64}{x-7} \div (x-8)$

[A]  $\frac{x-7}{x+8}$

[B]  $\frac{(x-8)(x+8)}{x-7}$

[C]  $\frac{x-8}{x-7}$

[D]  $\frac{x+8}{x-7}$

16.  $\frac{8x^2y^4+20xy^2+4xy}{4xy}$

[A]  $2xy^3+20xy^2+4xy$

[B]  $2xy^3+5y+xy$  [C]  $2xy^3+20xy^2+1$

[D]  $2xy^3+5y+1$

**Standard 7**

17. Simplify the expression.

$$\frac{j+5}{k} - \frac{j-4}{k}$$

[A]  $\frac{2j+1}{k}$  [B]  $\frac{1}{k}$  [C]  $\frac{2j+9}{k}$  [D]  $\frac{9}{k}$

**Standard 8**

18. Solve the equation.

$$\frac{2}{5}(15p-20) = -8p+3(p-6)$$

[A]  $-8$  [B]  $\frac{10}{11}$  [C]  $-\frac{10}{11}$  [D]  $-\frac{1}{5}$

Solve:

19.  $x + 9 = 3(5x - 1)$

[A]  $\frac{6}{7}$

[B] All real numbers

[C] no solution

[D]  $\frac{3}{7}$

20.  $\frac{x}{3} - \frac{x}{4} = 1$

**Standard 9**

21. Solve the inequality.  
 $-x + 4 > 10$

**Standard 10**

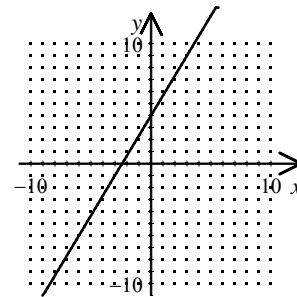
22. What is the solution to the equation  $\frac{|x|}{5} + 1 = 5$ ?

[A]  $\pm 20$    [B]  $\pm 19$    [C]  $\pm 21$    [D]  $\pm 22$

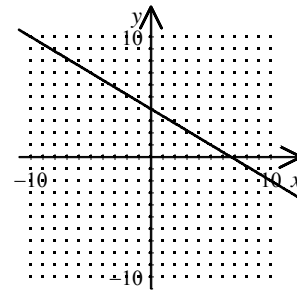
**Standard 11**

23. Which shows the graph of  $y = \frac{5}{3}x + 4$ ?

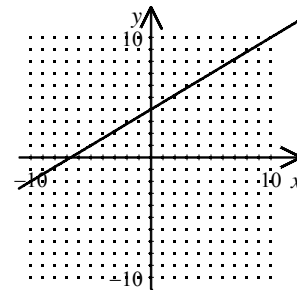
[A]



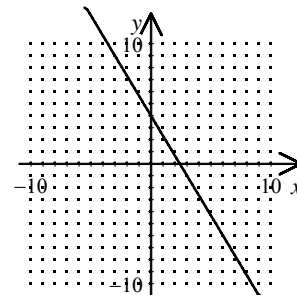
[B]



[C]

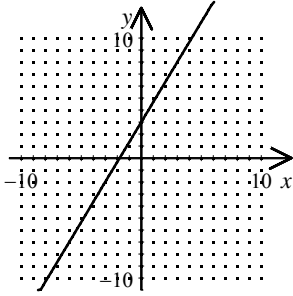


[D]

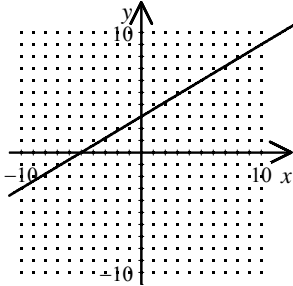


24. Which shows the graph of  $y = \frac{3}{5}x + 3$ ?

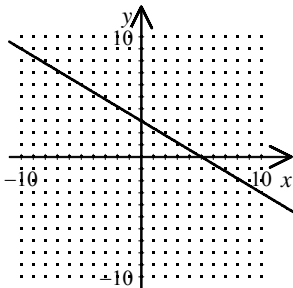
[A]



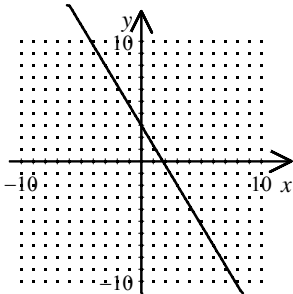
[B]



[C]



[D]



**Standard 12**

25. Find the  $x$ - and  $y$ -intercepts of  $y = 7x - 9$ .

[A]  $x$ -intercept:  $\frac{9}{7}$ ;  $y$ -intercept:  $-9$

[B]  $x$ -intercept:  $-9$ ;  $y$ -intercept:  $7$

[C]  $x$ -intercept:  $7$ ;  $y$ -intercept:  $-9$

[D]  $x$ -intercept:  $-9$ ;  $y$ -intercept:  $\frac{9}{7}$

26. Find the  $x$ -intercept and the  $y$ -intercept.

$$y = -2x + 3$$

[A]  $x$ -intercept:  $-2$ ;  $y$ -intercept:  $3$

[B]  $x$ -intercept:  $\frac{3}{2}$ ;  $y$ -intercept:  $3$

[C]  $x$ -intercept:  $3$ ;  $y$ -intercept:  $\frac{3}{2}$

[D]  $x$ -intercept:  $3$ ;  $y$ -intercept:  $-2$

**Standard 13**

27. Which ordered pair is a solution of the equation  $2x - 3y = 18$ ?

[A]  $(-4, 3)$

[B]  $(3, -4)$

[C]  $(3, -5)$

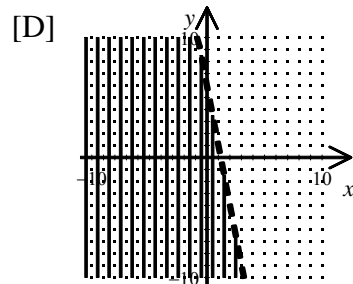
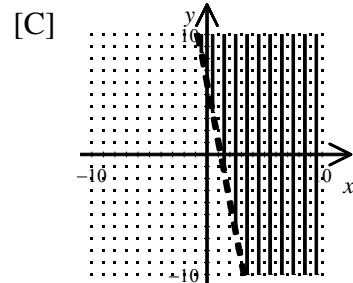
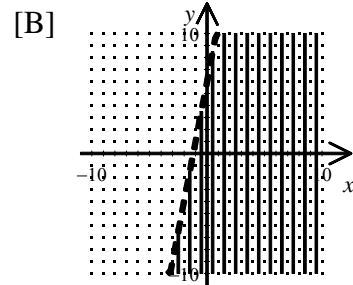
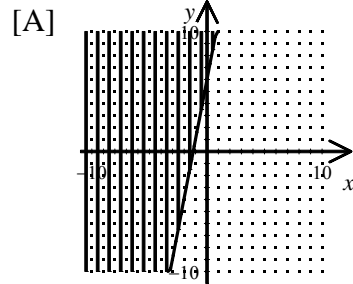
[D]  $(-5, 3)$

28. Which ordered pair is a solution of the equation  $3x + y = 7$ ?

- [A] (4, 1)                      [B] (0, 4)  
 [C] (4, 0)                      [D] (1, 4)

**Standard 15**

30. Choose the graph that shows the solution to the inequality.  
 $y > -5x + 6$

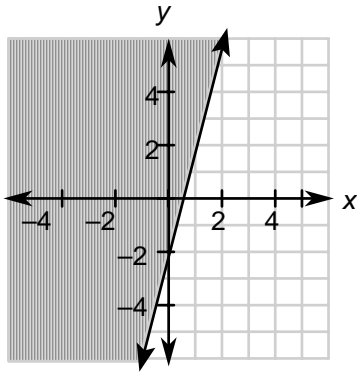


**Standard 14**

29. Find the slope of the line passing through the points  $A(6, -4)$  and  $B(-5, 8)$ .

- [A]  $-\frac{11}{12}$     [B]  $-\frac{12}{11}$     [C]  $\frac{1}{12}$     [D] 4

31. Which statement describes the graph?

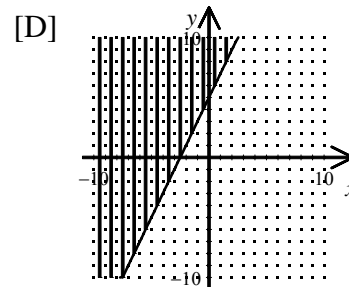
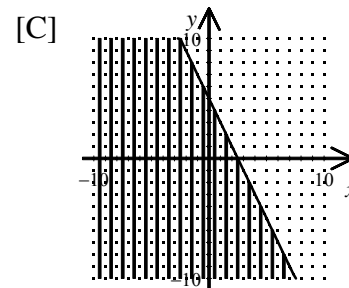
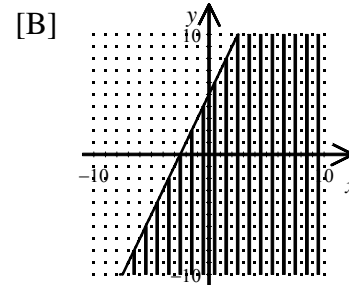
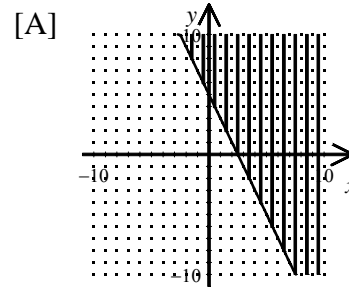


- [A]  $4x - y = -2$       [B]  $4x - y \leq 2$   
 [C]  $4x - y > -2$       [D]  $4x - y \geq -2$   
 [E]  $4x - y < -2$

32. Which inequality has  $(-3, 3)$  as a solution?

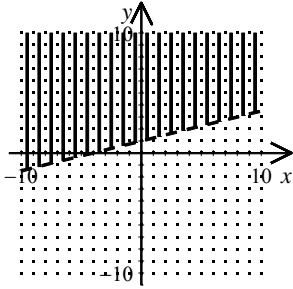
- [A]  $-2x + 4y \geq 16$       [B]  $4x - y \leq -17$   
 [C] none of these      [D]  $-x - 2y \geq -1$

33. Graph:  $-y \leq 2x - 5$

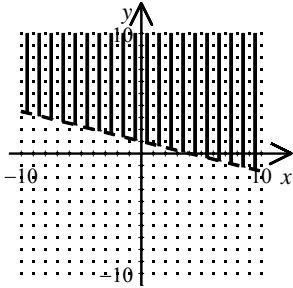


34. Graph the inequality.  
 $x - 4y < -4$

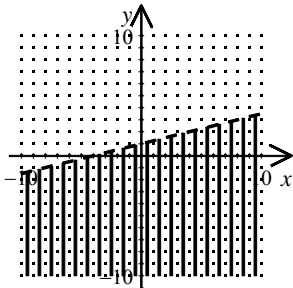
[A]



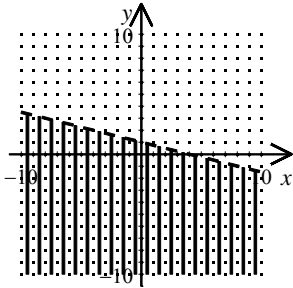
[B]



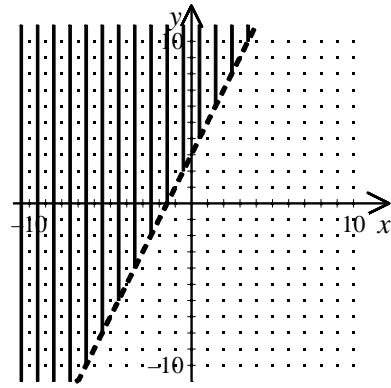
[C]



[D]



35. Which inequality matches the graph?



[A]  $y > -2x + 3$

[B]  $y > 2x + 3$

[C]  $y > 3$

[D]  $y < 2x + 3$

**Standard 16**

36. What is the range of the function  $y = -2x^2 + x$  when the domain is  $\{1, 3, 5\}$ ?
- [A]  $\{5, 21, 55\}$       [B]  $\{1, 15, 45\}$   
 [C]  $\{3, 9, 5\}$       [D]  $\{-3, -9, -5\}$   
 [E]  $\{-1, -15, -45\}$



37. Determine which relation is a function.

[A] 

$x$	-1	0	-1	2
$y$	-2	2	3	2

[B] 

$x$	-4	5	-4	1
$y$	-2	5	2	8

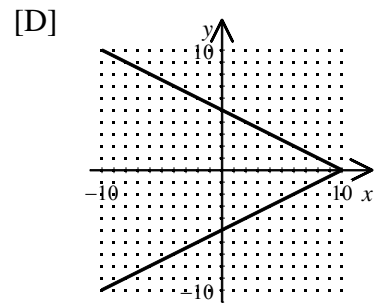
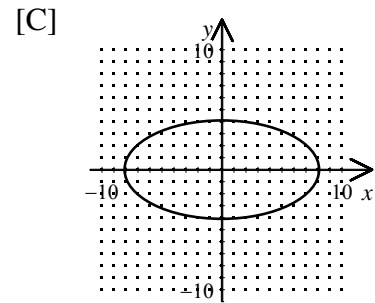
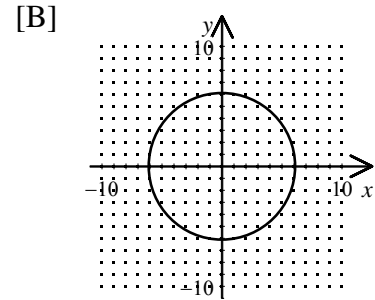
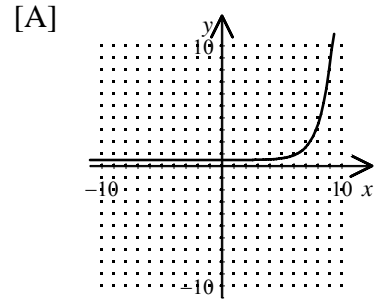
[C] 

$x$	-1	0	-1	-4
$y$	-1	0	1	2

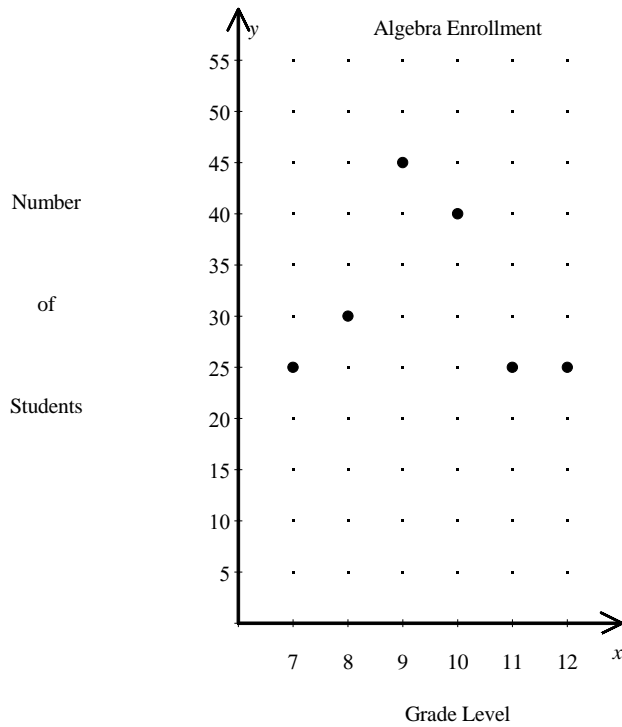
[D] 

$x$	1	2	3	4
$y$	1	4	9	16

38. Determine which of the following graphs represents a function.



39. The graph shows the number of students enrolled in a first year algebra course in the Evergreen School District. What is the range on the graph shown?



- [A] {25, 30, 40, 45}
- [B] {0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55}
- [C] {7, 8, 9, 10, 11, 12}
- [D] {7, 8, 9, 10, 11, 12, 25, 30, 40, 45}
40. Find  $f(-1)$  given  $f(x) = x+4$ .      [A] -1      [B] 3      [C] 5      [D] -5
41. Find the range of the relation  $\{(-4, 4), (3, 2), (5, -6)\}$ .
- [A]  $\{-4, 3, -6\}$       [B]  $\{4, 2, 5\}$       [C]  $\{4, 2, -6\}$       [D]  $\{-4, 3, 5\}$

**Standard 17**

42. Determine if the system has no solutions, one solution, or many solutions.

$$2x - y = -1$$

$$-6x + 3y = 3$$

- [A]  $(-2, -3)$                       [B]  $(-2, 3)$   
 [C] many solutions                  [D] no solution

**Standard 18**

43. Solve by linear combinations.

$$2x + 2y = 12$$

$$x - 2y = 3$$

- [A]  $(22, 1)$                           [B]  $(0, 6)$   
 [C]  $(5, 1)$                           [D] no solution

44. A jar containing only nickels and dimes contains a total of 64 coins. The value of all the coins in the jar is \$4.50. How many dimes are in the jar?

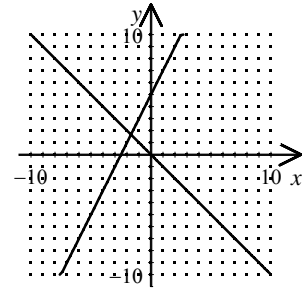
- [A] 41      [B] 26      [C] 24      [D] 38

Estimate the solution of the linear system graphically. Then check the solution algebraically.

45.  $x + y = -2$

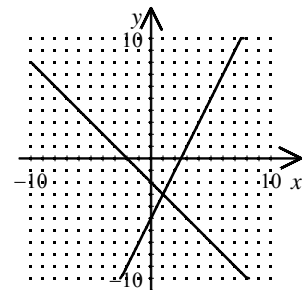
$$2x - y = 5$$

[A]



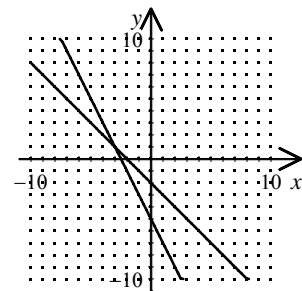
$(-2, 2)$

[B]



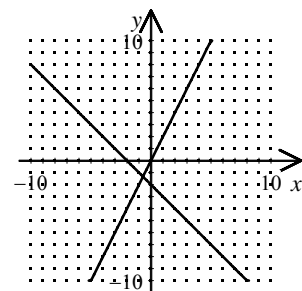
$(1, -3)$

[C]



$(-2, 2)$

[D]

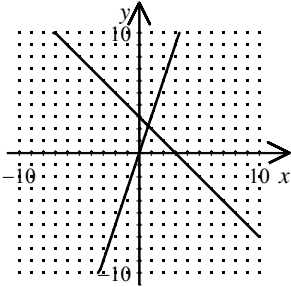


$(1, -3)$

Estimate the solution of the linear system graphically.  
Then check the solution algebraically.

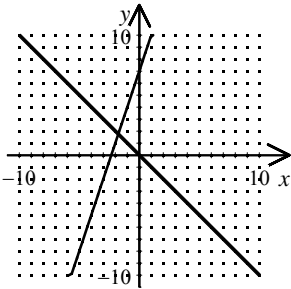
46.  $x + y = 3$   
 $y = 3x + 7$

[A]



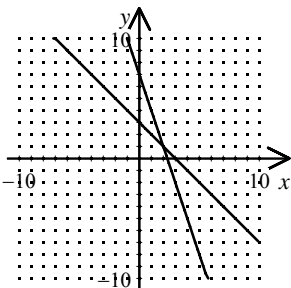
$\left(\frac{3}{4}, \frac{9}{4}\right)$

[B]



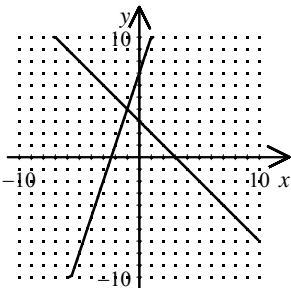
$\left(-\frac{7}{4}, \frac{7}{4}\right)$

[C]



$(2, 1)$

[D]



$(-1, 4)$

47. Use substitution to solve the linear system.

$$x + 4y = 18$$

$$y = 3x - 2$$

[A]  $(2, 4)$

[B]  $(3, 7)$

[C]  $\left(4, \frac{7}{2}\right)$

[D] no solution

48. Tickets to a local movie were sold at \$3.00 for adults and \$1.50 for students. If 290 tickets were sold for a total of \$720.00, how many adult tickets were sold?

[A] 205

[B] 100

[C] 190

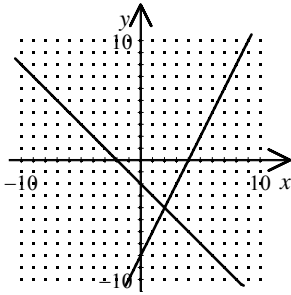
[D] 90

49. Graph the system of linear equations.

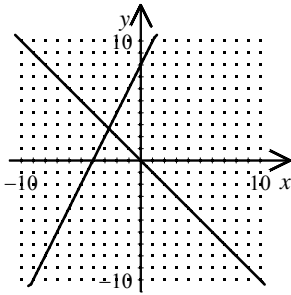
$$x + y = -2$$

$$2x - y = 8$$

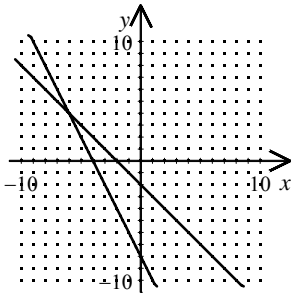
[A]



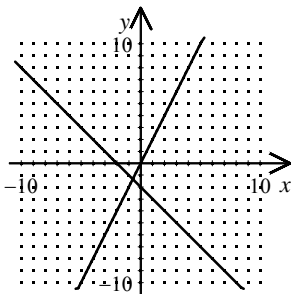
[B]



[C]

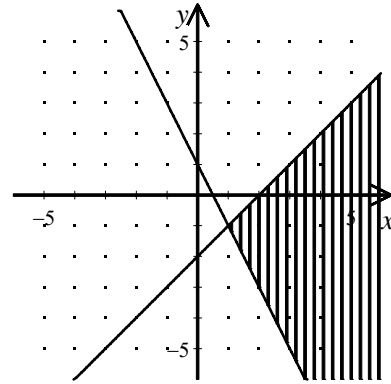


[D]



**Standard 19**

50. Which system of inequalities describes the graph?



[A]  $y < -2x + 1$

$y \geq x - 2$

[B]  $y \leq -2x + 1$

$y > x - 2$

[C]  $y \geq -2x + 1$

$y \leq x - 2$

[D]  $y > -2x + 1$

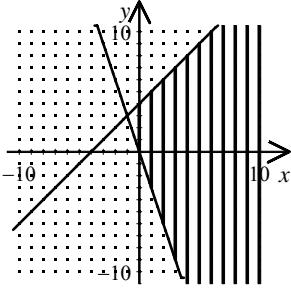
$y \leq x - 2$

[E]  $y \leq -2x + 1$

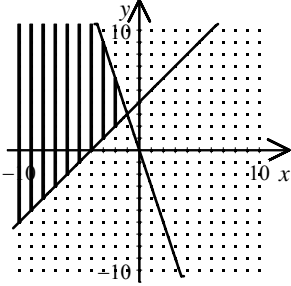
$y \geq x - 2$

51. Solve the system by graphing.  $y \geq -3x$   
 $y \leq x+4$

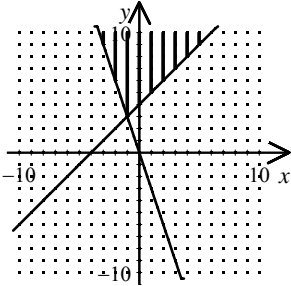
[A]



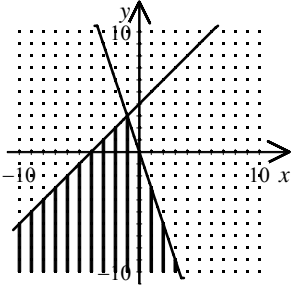
[B]



[C]

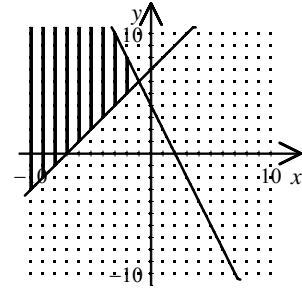


[D]

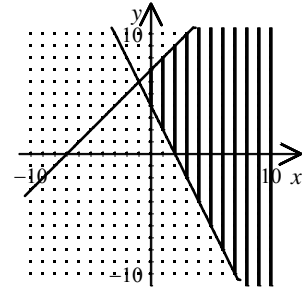


52. Graph the system.  
 $y \leq x+7$   
 $2x+y \leq 4$

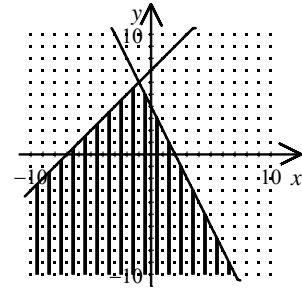
[A]



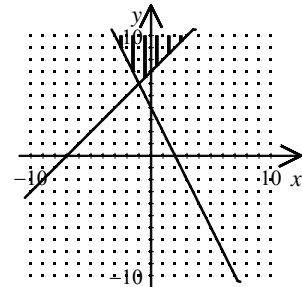
[B]



[C]



[D]

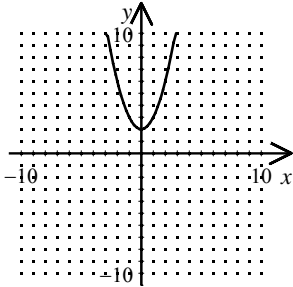


**Standard 20**

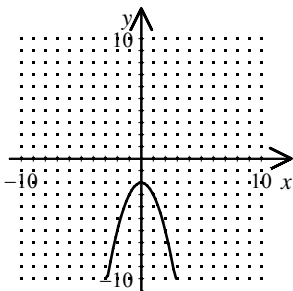
Graph the equation.

53.  $y = x^2 + 2$

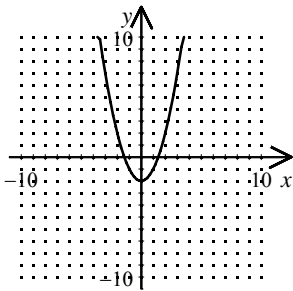
[A]



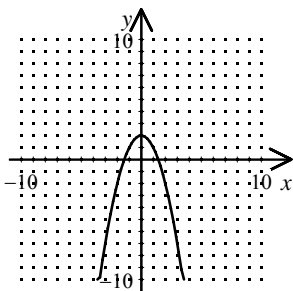
[B]



[C]

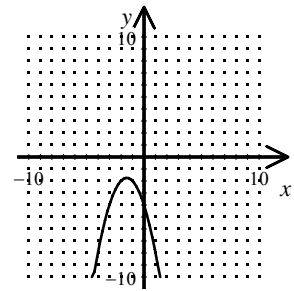


[D]

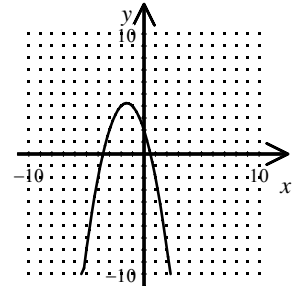


54.  $y = -x^2 - 3x - 4$

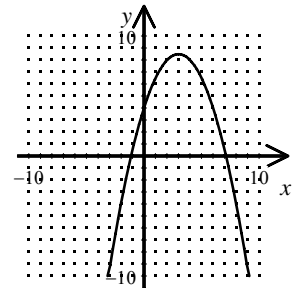
[A]



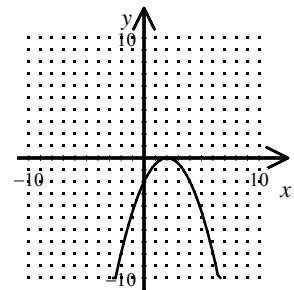
[B]



[C]

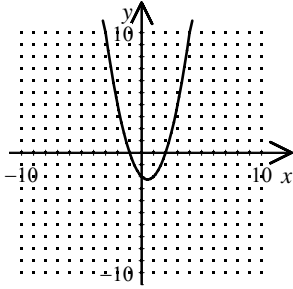


[D]



**Standard 21**

55. Identify the roots and choose the correct quadratic function represented by the graph below.



- [A] the roots are 1 and  $-2$   
 $x^2 - x - 2 = 0$
- [B] the roots are  $-1$  and 2  
 $x^2 - x - 2 = 0$
- [C] the roots are  $-1$  and  $-2$   
 $x^2 + x - 2 = 0$
- [D] the roots are 1 and 2  
 $-x^2 + x - 2 = 0$

**Standard 22**

Solve:

56.  $16x = x^2$   
 [A]  $-4, 4$  [B]  $0, 16$  [C]  $1, 16$  [D]  $0, 4$
57.  $x^2 - 2x - 3 = 0$   
 [A]  $1, 3$  [B]  $-1, 3$  [C]  $-3, 1$  [D]  $-1, -3$

58.  $4x^2 + 5x = 0$   
 [A]  $x = 0$  or  $x = \frac{4}{5}$  [B]  $x = -\frac{5}{6}$  or  $x = 0$   
 [C]  $x = -\frac{5}{4}$  or  $x = 0$  [D]  $x = 0$  or  $x = \frac{5}{4}$

59. What are the solutions to the equation?  
 $x^2 + x - 12 = 0$   
 [A]  $x = 3$  or  $x = -4$   
 [B]  $x = 1$  or  $x = -12$   
 [C]  $x = 12$  or  $x = -1$   
 [D]  $x = 4$  or  $x = -3$

60. Solve the equation or write *no real solution*.  
 $4x^2 - 81 = 0$   
 [A]  $-\frac{81}{4}, \frac{81}{4}$  [B]  $-\frac{9}{2}, \frac{9}{2}$   
 [C]  $-\frac{2}{9}, \frac{2}{9}$  [D] no real solution

61. Solve:  $(x + 6)^2 = 36$   
 [A]  $12, 0$  [B]  $0, -12$   
 [C]  $2, -10$  [D]  $1, -11$



62. The width of a kitchen is  $(x - 7)$  feet and the length is  $(x)$  feet. If the area of the kitchen is 330 square feet, what is its width?
- [A] 22 ft   [B] 38 ft   [C] 14 ft   [D] 15 ft

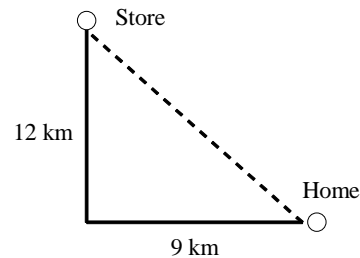
65. A water balloon is thrown from an apartment window. The water balloon's height,  $h$  (in feet above the ground), after  $t$  seconds is modeled by  $h = -16t^2 + 454$ . What is the balloon's height after 4 seconds?
- [A] 208 ft                      [B] 198 ft  
 [C] 710 ft                        [D] 396 ft

**Standard 23**

63. Write in standard form and determine  $a$ ,  $b$  and  $c$ .
- $$3x^2 - 9 = 2x$$
- [A]  $3x^2 = 2x - 9$ ;  $a = 3$ ,  $b = 2$ ,  $c = -9$   
 [B]  $3x^2 - 2x - 9 = 0$ ;  $a = 3$ ,  $b = -2$ ,  $c = -9$   
 [C]  $3x^2 - 2x + 9 = 0$ ;  $a = 3$ ,  $b = 2$ ,  $c = 9$   
 [D]  $3x^2 + 2x - 9 = 0$ ;  $a = -9$ ,  $b = -2$ ,  $c = 3$

64. Write the quadratic equation in standard form. Then solve using the quadratic formula.
- $$x^2 = 5x - 1$$
- [A]  $-5 + \sqrt{21}$ ,  $-5 - \sqrt{21}$   
 [B]  $\frac{5 + \sqrt{21}}{2}$ ,  $\frac{5 - \sqrt{21}}{2}$   
 [C]  $5 + \sqrt{21}$ ,  $5 - \sqrt{21}$   
 [D]  $\frac{5 + \sqrt{21}}{2}$ ,  $\frac{-5 - \sqrt{21}}{2}$

66. To get to the store from his house, Neil biked 9 kilometers due west and then 12 kilometers due north. On the way back he cut across a field, taking the shortest possible route home.



- How far did Neil bike on the round-trip?
- [A] 36 km                      [B] 21 km  
 [C] 42 km                        [D] 15 km

**Standard 24**

67. Determine the number of real solutions of the equation.
- $$3x^2 + 6x + 3 = 0$$
- [A] 0            [B] 3            [C] 1            [D] 2

68. Determine whether the graph of the function will intersect the  $x$ -axis in *zero*, *one*, or *two* points.

$$3x^2 - 12x + 12 = 0$$

- [A] two points      [B] zero points  
[C] one point      [D] cannot be determined

**Standard 25**

69. Find the missing terms:  $x^2 - 14x + \underline{\hspace{2cm}} = (\underline{\hspace{2cm}})^2$

- [A] 49;  $x - 7$       [B]  $-14$ ;  $x - 14$   
[C]  $-14$ ;  $x + 14$       [D] 49;  $x + 7$

70. Find the term that must be added to both sides of the equation so that the equation can be solved by the method of completing the square:

$x^2 + 12x = 11$ . Then solve the equation by completing the square.

- [A] 36;  $x = -6 \pm \sqrt{47}$   
[B] 144;  $x = -11, -1$   
[C]  $-11$ ;  $x = -11, -1$   
[D] 72;  $x = -6 \pm \sqrt{47}$

**Standard 26**

71. Write the first 3 steps of the proof of the quadratic formula