

Algebra I Final Review**Multiple Choice**

Indicate the answer choice that best completes the statement or answers the question.

- ___ 1. Jordan is 3 years less than twice the age of his cousin. If their ages total 48, how old is Jordan?
a. 15 b. 12
c. 31 d. 17

Evaluate. Express the result in scientific notation.

- ___ 2. $\frac{3.85 \times 10^5}{5.5 \times 10^{-8}}$
a. 7×10^3 b. 0.7×10^{13}
c. 0.7×10^{-3} d. 7×10^{12}

- ___ 3. $\frac{34.5 \times 10^3}{6 \times 10^{-6}}$
a. 0.575×10^{10} b. 5.75×10^3
c. 5.75×10^9 d. 5.75×10^{-3}

- ___ 4. $\frac{3.25 \times 10^4}{5.2 \times 10^{-8}}$
a. 0.625×10^{12} b. 6.25×10^4
c. 6.25×10^{11} d. 0.625×10^{-4}

Solve the equation of exponential decay.

- ___ 5. A car sells for \$25,000. If the rate of depreciation is 15%, what is the value of the car after 7 years? Round to the nearest hundred.
a. \$8,000 b. \$9,400
c. \$7,400 d. \$9,800

- ___ 6. Isaac downloaded 7 ringtones. Each polyphonic ringtone costs \$3.25, and each standard ringtone costs \$1.50. If he spends a total of \$21 on ringtones, find the number of polyphonic and standard ringtones he downloaded.
a. 1 polyphonic, 6 standard b. 8 polyphonic, 1 standard
c. 6 polyphonic, 13 standard d. 6 polyphonic, 1 standard

Use elimination to solve the system of equations.

- ___ 7. $-6x + 3y = 39$
 $-6x + 2y = 36$
a. $(-5, 3)$ b. $(5, -3)$
c. $(-3, 4)$ d. $(3, -4)$

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- ___ 8. $6x - 8y = -38$
 $5x + 12y = 99$
 a. $(-2, -2)$ b. $(7, 3)$
 c. $(2, 2)$ d. $(3, 7)$

Determine whether the data in the table display exponential behavior. Explain why or why not.

___ 9.

x	-6	-4	-3	-2
y	0.125	2	8	32

- a. Yes; the domain values are at regular intervals and the range values have a common factor 8.
 b. Yes; the domain values are at regular intervals and the range values have a common factor 4.
 c. No; the domain values are not at regular intervals.
 d. No; the domain values are at regular intervals and the range values have a common factor 4.

___ 10.

x	3	1	-1	-3
y	1	2	3	4

- a. No; the domain values are at regular intervals and the range values change at a constant rate as well.
 b. No; the domain values are not at regular intervals.
 c. Yes; the domain values are at regular intervals and the range values have a common factor 2.
 d. Yes; the domain values are at regular intervals and the range values have a common sum 1.

___ 11.

x	-2	0	2	4
y	-2	0	2	4

- a. No; the domain values are at regular intervals and the range values have a constant rate of change as well.
 b. No; the domain values are not at regular intervals.
 c. Yes; the domain values are at regular intervals and the range values are the same as the domain values.
 d. Yes; the domain values are at regular intervals and the range values have a common sum 2.

Simplify the expression.

- ___ 12. $\frac{8}{9 + \sqrt{10}}$
- a. $\frac{8(9 + \sqrt{10})}{(9 - \sqrt{10})}$ b. $\frac{(9 - \sqrt{10})}{71}$
- c. $\frac{8(9 - \sqrt{10})}{71}$ d. $\frac{8}{71}$

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___ 13. $\sqrt{50b^5c^3}$

a. $5b^2c$

b. $\sqrt{2bc}$

c. $25b^2c\sqrt{2bc}$

d. $5b^2c\sqrt{2bc}$

___ 14. $\frac{7}{\sqrt{3}}$

a. $\frac{\sqrt{3}}{7}$

b. $\frac{7\sqrt{3}}{3}$

c. $\frac{7\sqrt{3}}{\sqrt{3}}$

d. $\sqrt{\frac{7}{3}}$

___ 15. $\sqrt{\frac{10}{3}}$

a. $\sqrt{\frac{3}{10}}$

b. $\frac{30}{\sqrt{3}}$

c. $\frac{\sqrt{30}}{3}$

d. $\frac{8}{13}$

___ 16. $\frac{3\sqrt{6}}{-9+\sqrt{7}}$

a. $\frac{(-9-\sqrt{7})}{74}$

b. $\frac{-27\sqrt{6}-3\sqrt{42}}{74}$

c. $\frac{3\sqrt{6}}{74}$

d. $\frac{-27\sqrt{6}+3\sqrt{42}}{(-9-\sqrt{7})}$

___ 17. $2\sqrt{5} \cdot \sqrt{19}$

a. $\sqrt{39}$

b. $4\sqrt{95}$

c. 380

d. $2\sqrt{95}$

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___ 18. $\sqrt{28} \cdot 2\sqrt{2}$

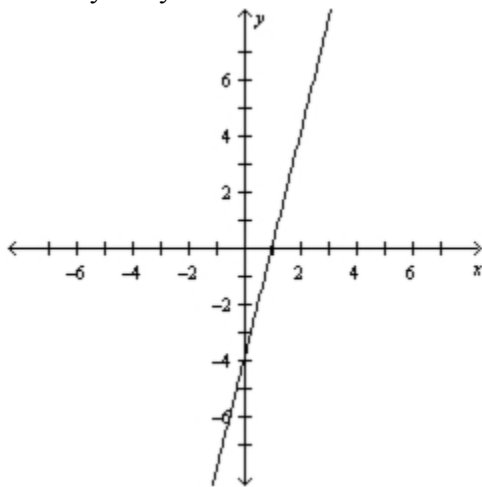
- a. 112 b. $8\sqrt{14}$
 c. $4\sqrt{14}$ d. $\sqrt{56}$

Graph the system of equations. Then determine whether the system has no solution, one solution, or infinitely many solutions. If the system has one solution, name it.

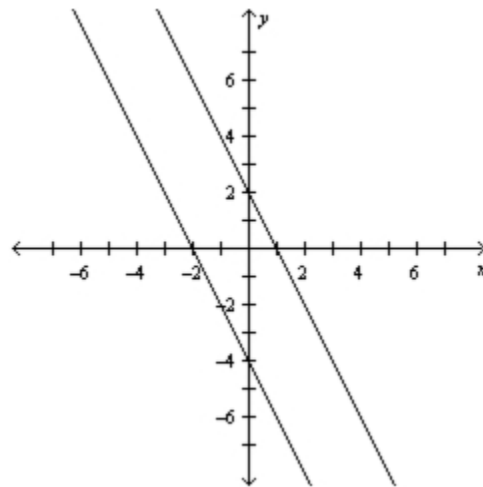
___ 19. $y = -2x + 2$

$y = 4x - 4$

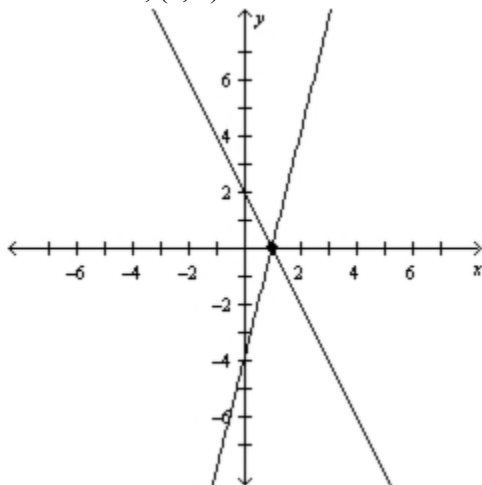
- a. infinitely many



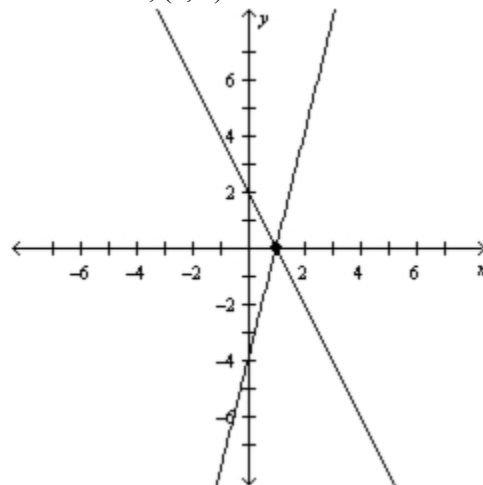
- b. no solution



- c. one solution; (0, 1)



- d. one solution; (1, 0)

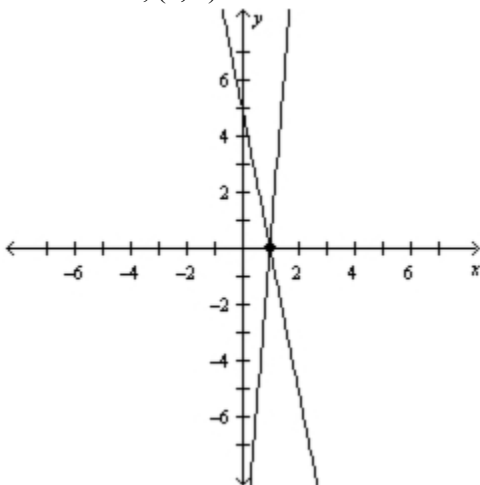


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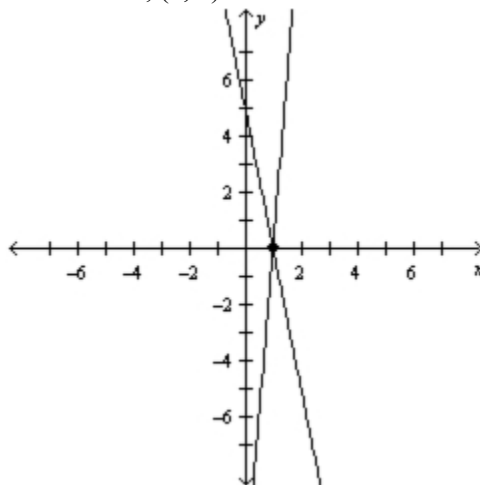
___ 20. $5x + y = 5$

$$6x - 6 = \frac{y}{2}$$

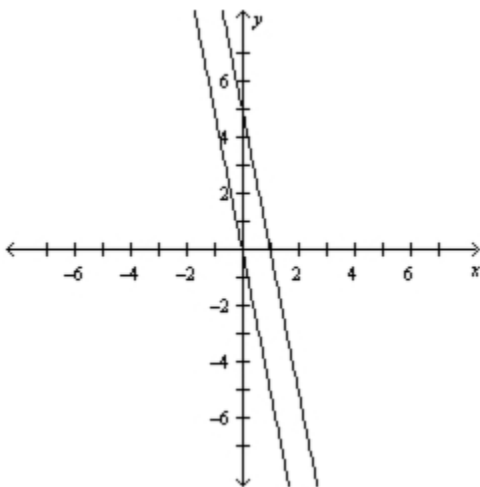
a. one solution; (1, 0)



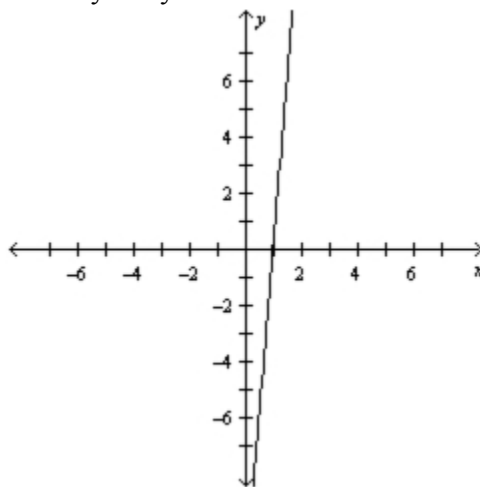
b. one solution; (0, 1)



c. no solution



d. infinitely many

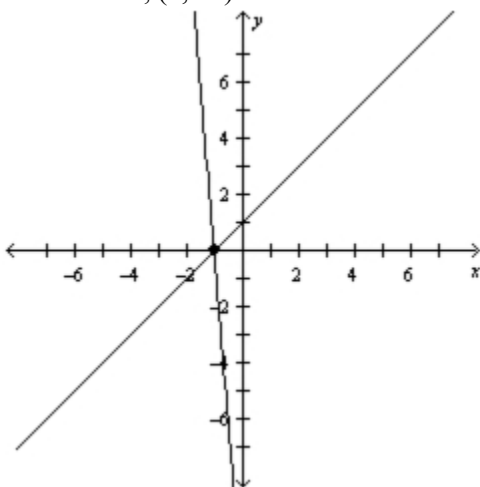


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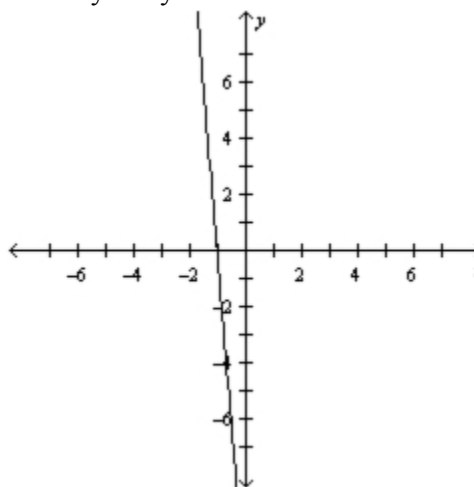
___ 21. $-x + y = 1$

$$-6x - 6 = \frac{y}{2}$$

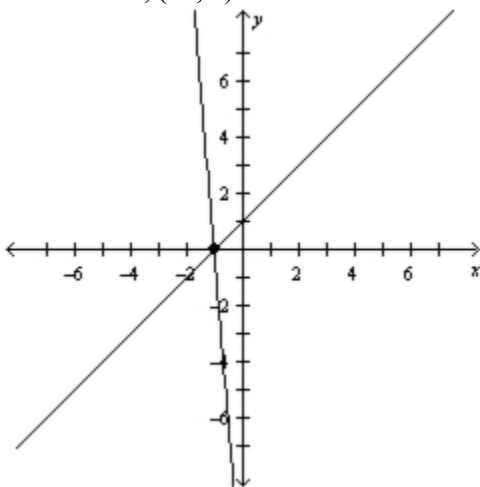
a. one solution; $(0, -1)$



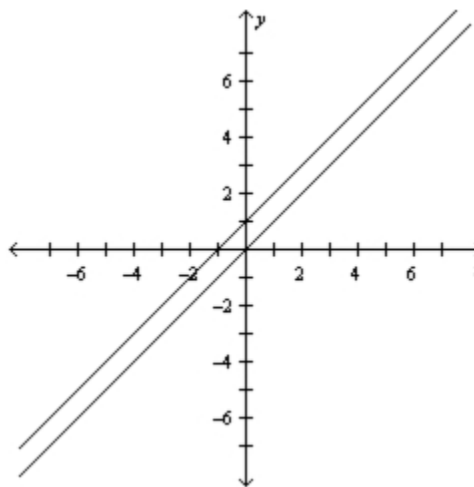
b. infinitely many



c. one solution; $(-1, 0)$



d. no solution

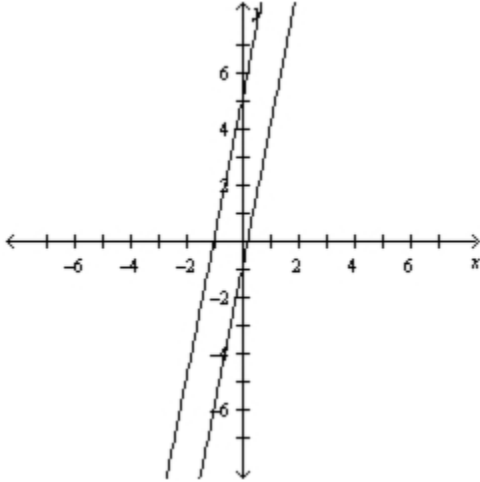


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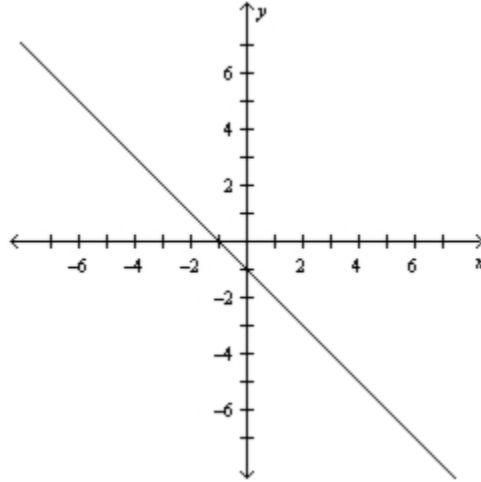
___ 22. $y = 5x + 5$

$y = -x - 1$

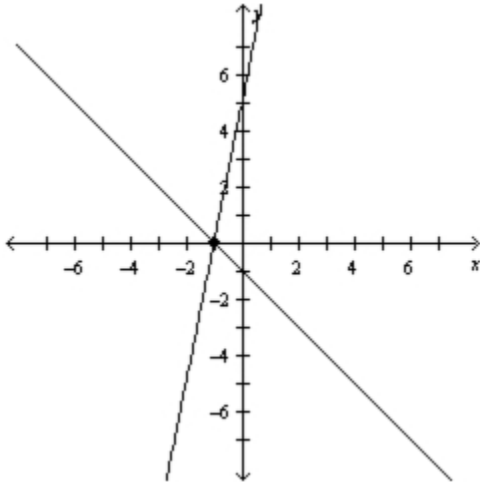
a. no solution



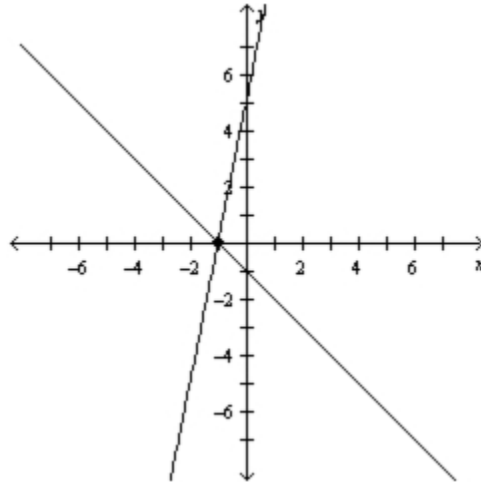
b. infinitely many



c. one solution; $(0, -1)$



d. one solution; $(-1, 0)$



Solve the trinomial equation.

___ 23. $k^2 + 4k = 96$

a. $\{-16, 6\}$ b. $\{12, -8\}$

c. $\{-12, 8\}$ d. $\{-10, 6\}$

___ 24. $r^2 - 11r + 28 = 0$

a. $\{14, 2\}$ b. $\{7, 4\}$

c. $\{-7, -4\}$ d. $\{9, 2\}$

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Solve the equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

- ___ 25. $h^2 + 5h - 14 = 0$
a. 0.2, -5.2 b. 4, -14
c. -4.5, 4.5 d. 2, -7

Use substitution to solve the system of equations.

- ___ 26. $28 = x - 7y$
 $-3x + 9 = 4y$
a. (7, -3) b. (10, 6)
c. (-7, 10) d. infinitely many solutions

Factor the polynomial, if possible. If the polynomial cannot be factored, write prime.

- ___ 27. $4n^3 + 20n^2 - 64n - 320$
a. $(n + 5)(2n + 8)(2n - 8)$
b. $(4n - 5)(n + 8)(n - 8)$
c. $(4n - 64)(n + 5)(n - 5)$
d. *prime*

Simplify. Assume that no denominator is equal to zero.

- ___ 28. $\frac{36m^{-4}n^5}{4mn^{-2}p^{-3}}$
a. $\frac{9n^7}{m^5p^3}$ b. $\frac{9n^7p^3}{m^5}$
c. $\frac{9n^3p^3}{m^3}$ d. $\frac{9m^5}{n^7p^3}$

- ___ 29. $(3g^3h^4)^4$
a. $12g^7h^8$ b. $81g^{12}h^{16}$
c. $81g^7h^8$ d. $12g^{12}h^{16}$

- ___ 30. Simplify: $\sqrt[5]{243}$.
a. 4
b. 3
c. $9\sqrt{3}$
d. 1,215

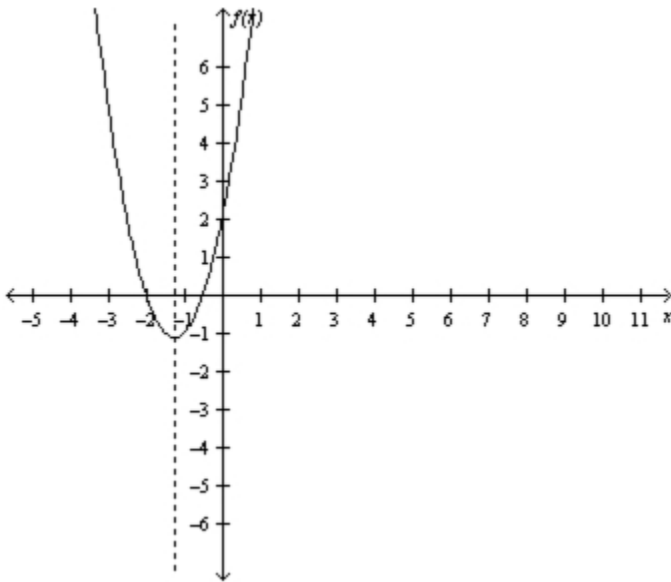
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- ___ 31. Reid and Maria both play soccer. This season, Reid scored 4 less than twice the number of goals that Maria scored. The difference in the number of goals they scored was 6. How many goals did each of them score?
- Reid scored 8 and Maria scored 2.
 - Reid scored 2 and Maria scored 8.
 - Reid scored 16 and Maria scored 10.
 - Reid scored 10 and Maria scored 16.

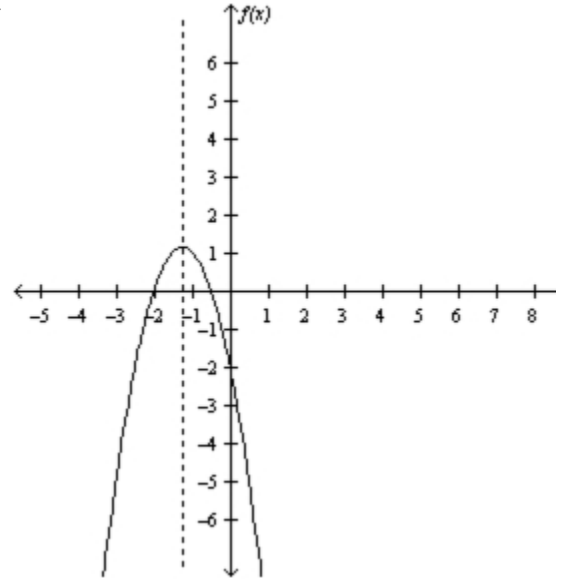
Graph the function.

___ 32. $y = -2x^2 + 5x - 2$

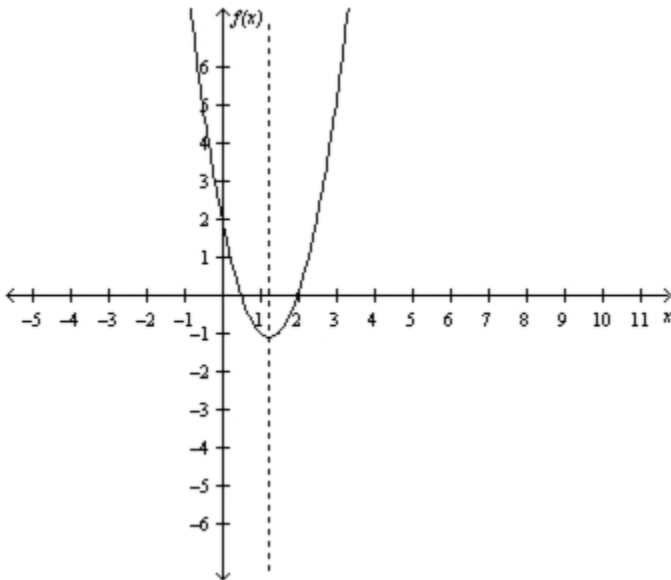
a.



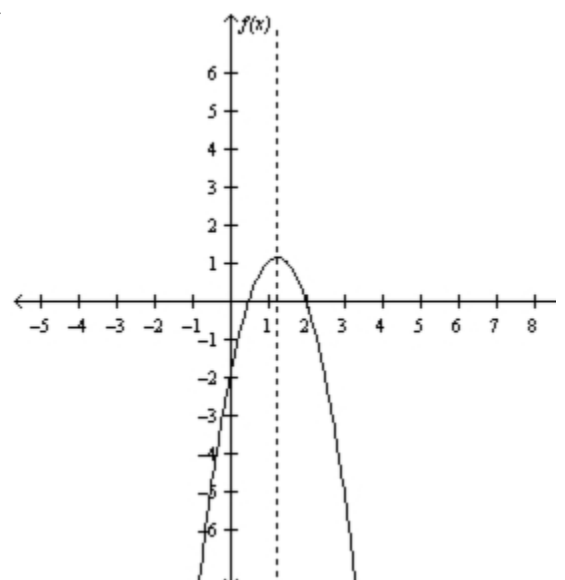
b.



c.



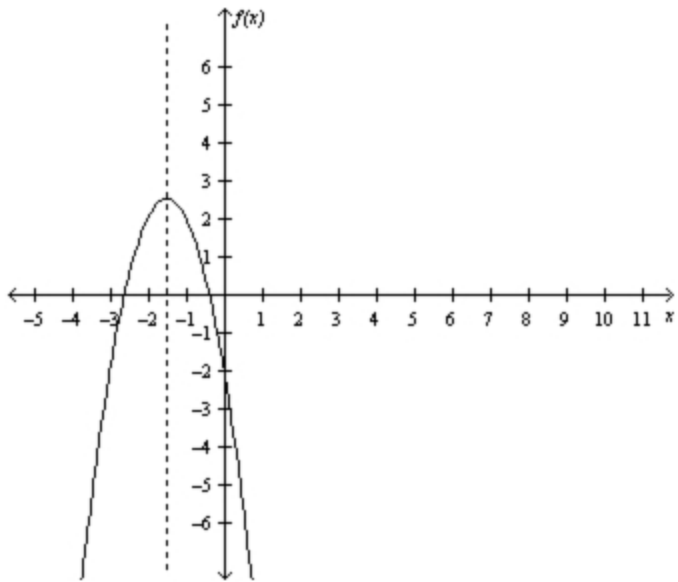
d.



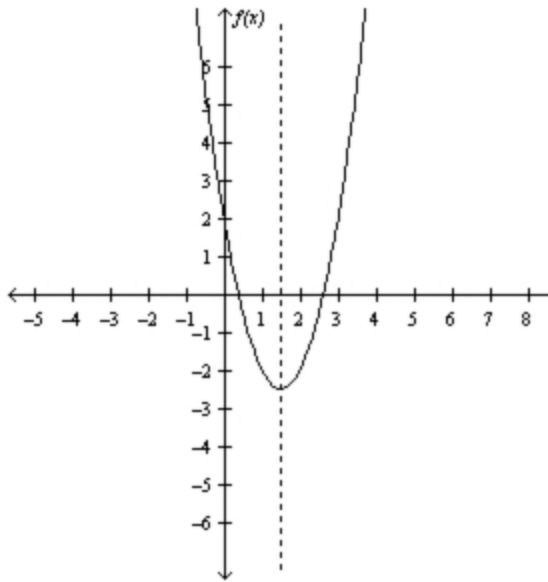
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___ 33. $y = -2x^2 + 6x - 2$

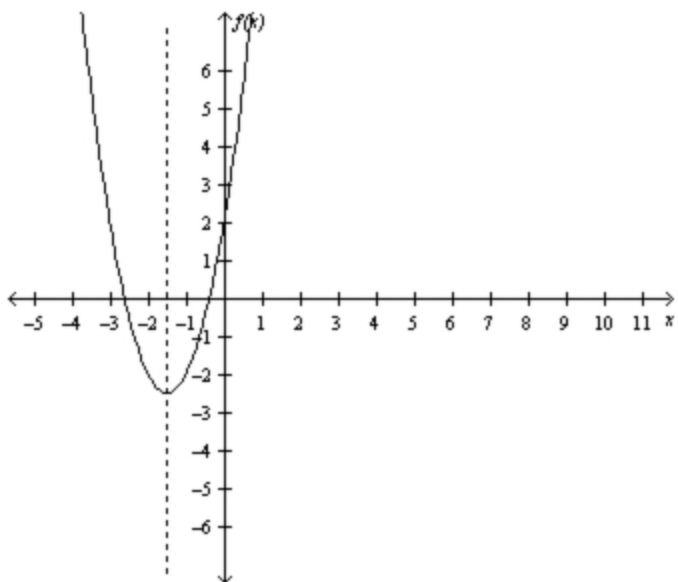
a.



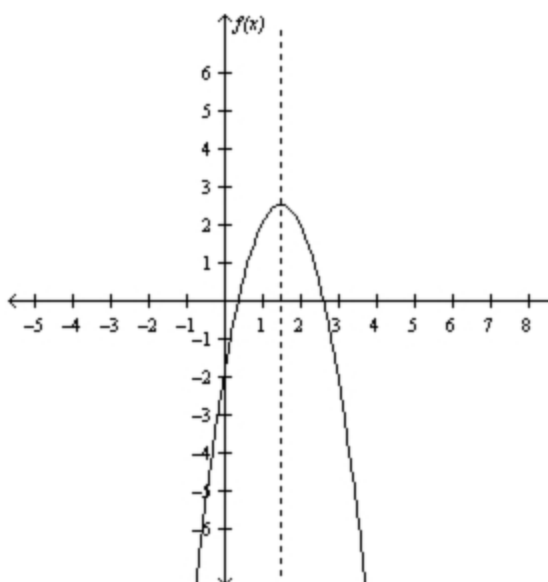
b.



c.



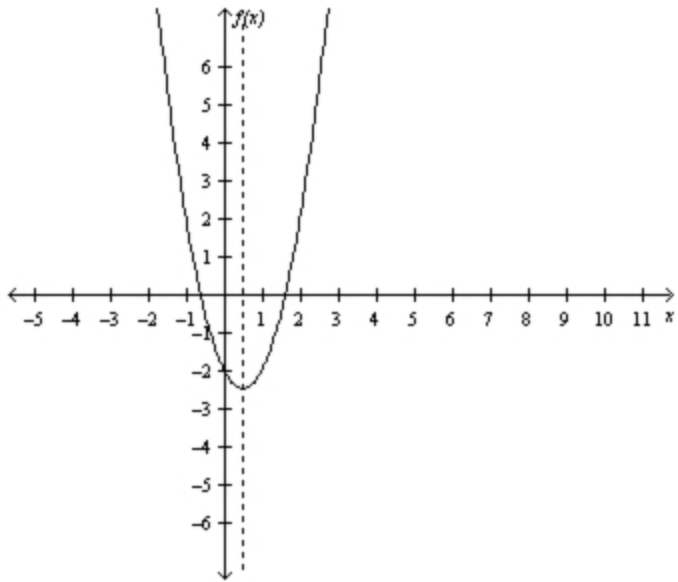
d.



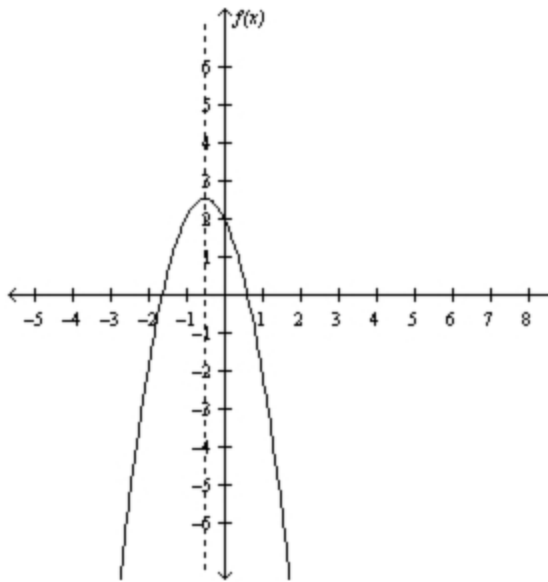
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___ 34. $y = -2x^2 + 2x + 2$

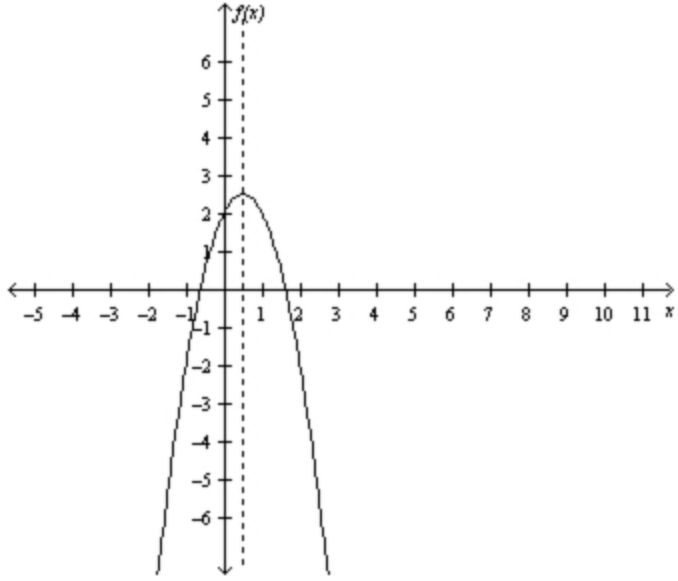
a.



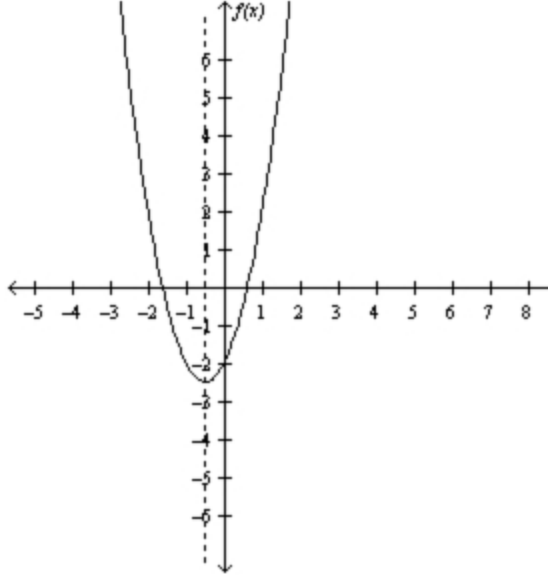
b.



c.



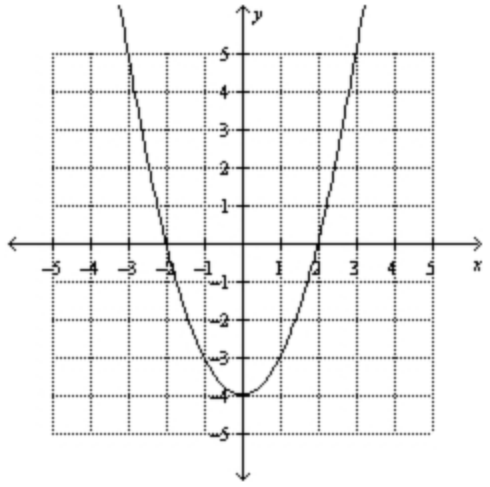
d.



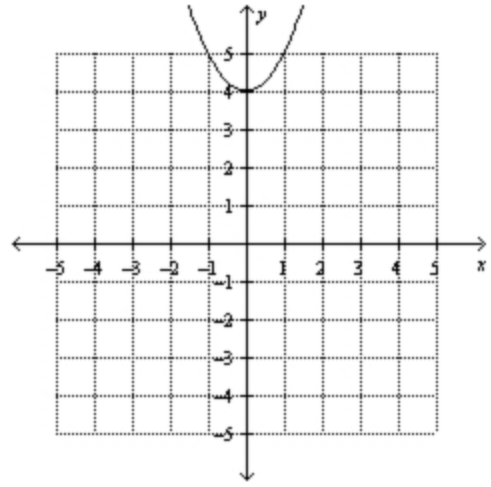
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___ 35. $y = -x^2 + 4$

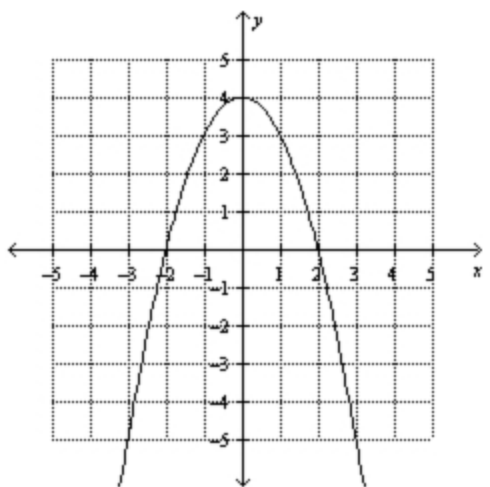
a.



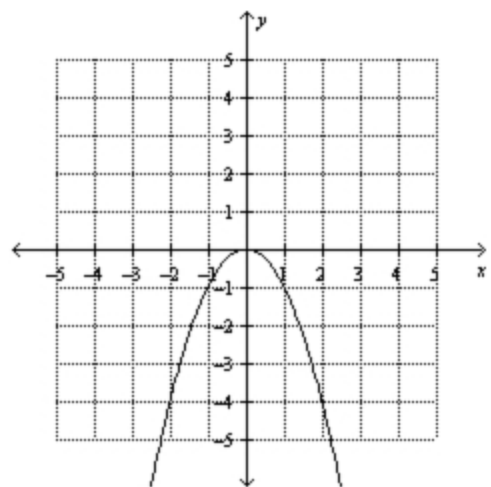
b.



c.



d.

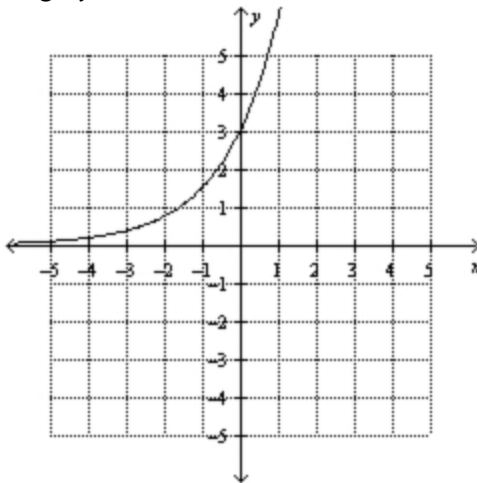


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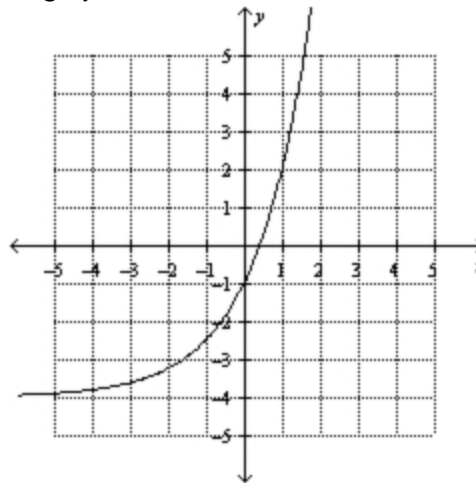
Graph the function. Find the y-intercept and state the domain and range.

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

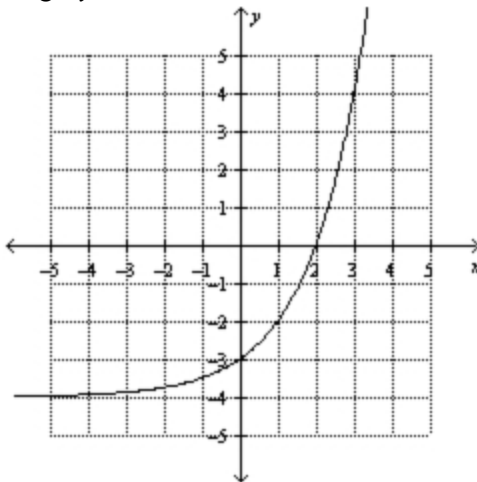
- a. y-intercept = 3
 domain: all real numbers
 range: $y > 0$



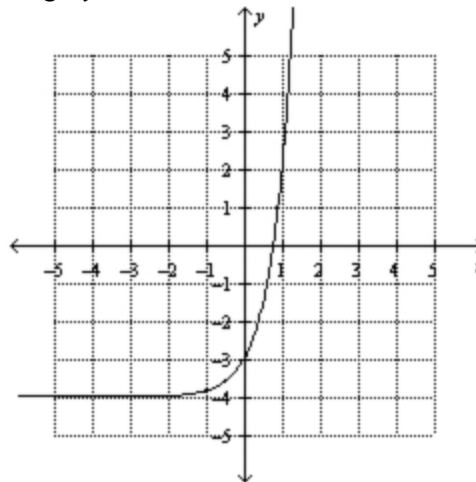
- b. y-intercept = -1
 domain: all real numbers
 range: $y > -4$



- c. y-intercept = -3
 domain: all real numbers
 range: $y > -4$

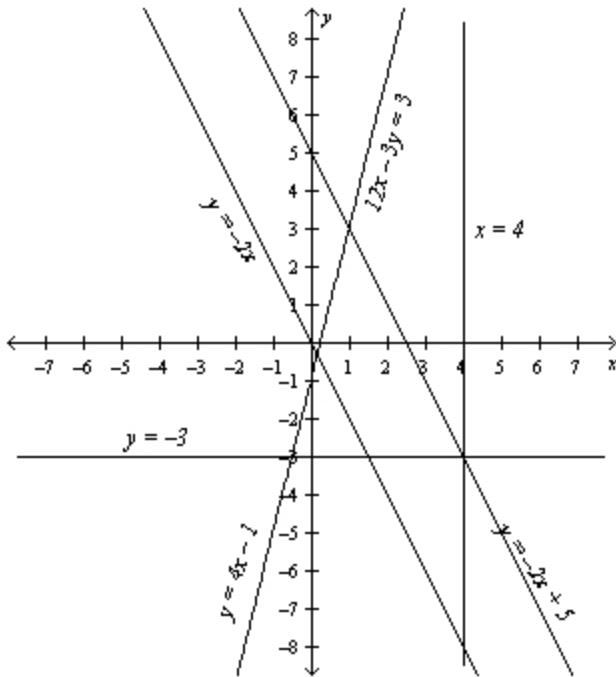


- d. y-intercept = -3
 domain: all real numbers
 range: $y > -4$



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Use the graph below to determine the number of solutions the system has.



___ 37. $y = -2x$

$x = 4$

- a. infinitely many
- b. two
- c. one
- d. no solution

___ 38. The cost of 3 large candles and 5 small candles is \$6.40. The cost of 4 large candles and 6 small candles is \$7.50. Which pair of equations can be used to determine, t , the cost of a large candle, and s , the cost of a small candle?

- a. $3t + 5s = 6.4$
- b. $t + s = 6.4$
- c. $4t + 6s = 7.5$
- d. $4t + 6s = 7.5$
- e. $3t + 5s = 6.4$
- f. $5t + 3s = 6.4$
- g. $t + s = 7.5$
- h. $6t + 4s = 7.5$

___ 39. Write $58^{1/2}$ in radical form.

- a. 29
- b. $\sqrt{58}$
- c. $\sqrt{29}$
- d. 58

Algebra I Final Review*Find the product.*

- ___ 40. $-3s^3t^4(-5s^3t^3 - 6st^4 - 4t)$
- a. $15s^9t^{12} + 18s^3t^{16} + 12s^3t^4$
- b. $15s^6t^7 + 18s^4t^8 + 12s^3t^5$
- c. $15s^6t^7 + 18s^4t^8 + 12t^5$
- d. $-15s^6t^7 - 18s^4t^8 - 12s^3t^5$

Solve the equation.

- ___ 41. $3p(3p - 8) - 8 = 9p(p - 3) + 4$
- a. -17 b. 4
- c. $-\frac{48}{9}$ d. 1
- ___ 42. $m(m - 3) - 2m(m - 4) = -(m^2 - 4m) + 6$
- a. -6 b. $\frac{13}{4}$
- c. 6 d. $\frac{1}{4}$

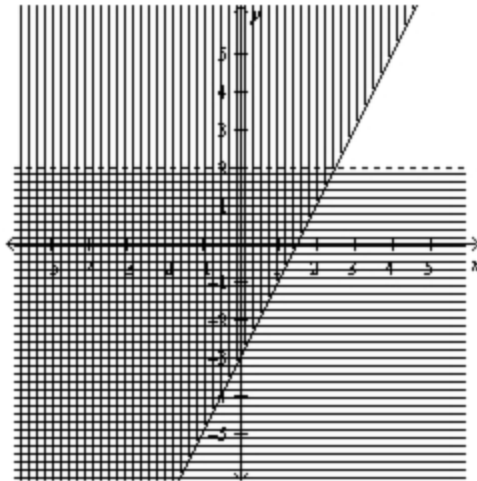
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Solve the system of inequalities by graphing.

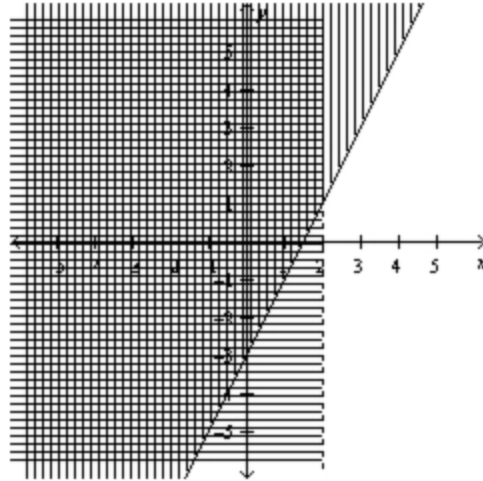
___ 43. $y \geq 2x - 3$

$y < 2$

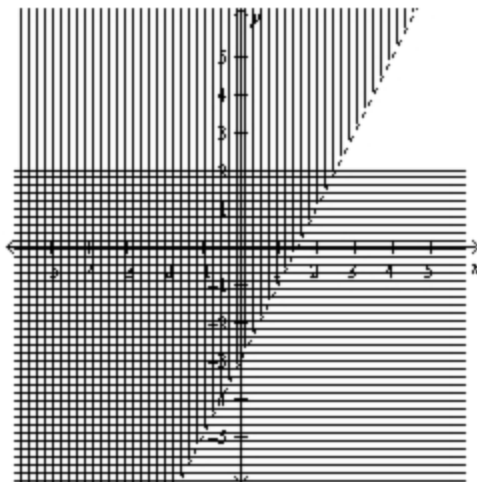
a.



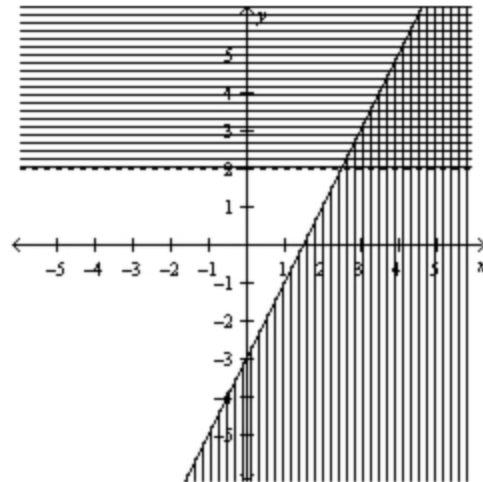
b.



c.



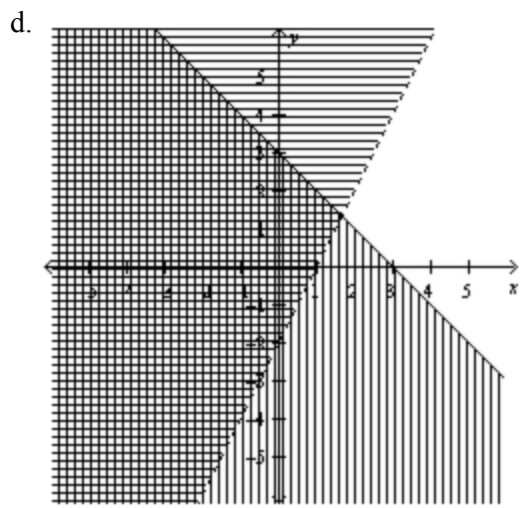
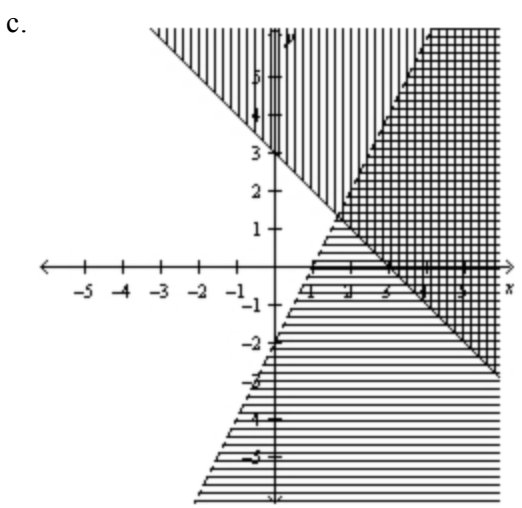
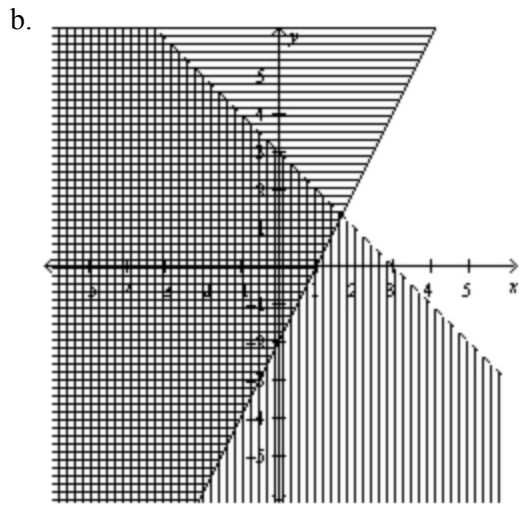
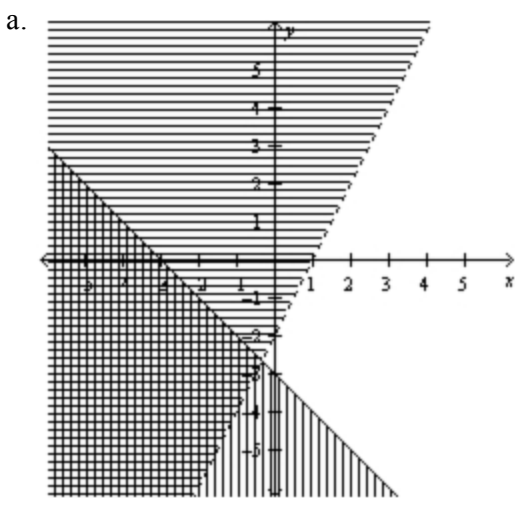
d.



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___ 44. $y \leq -x + 3$

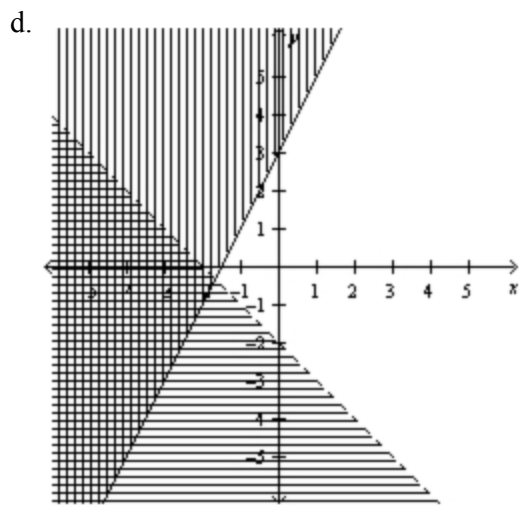
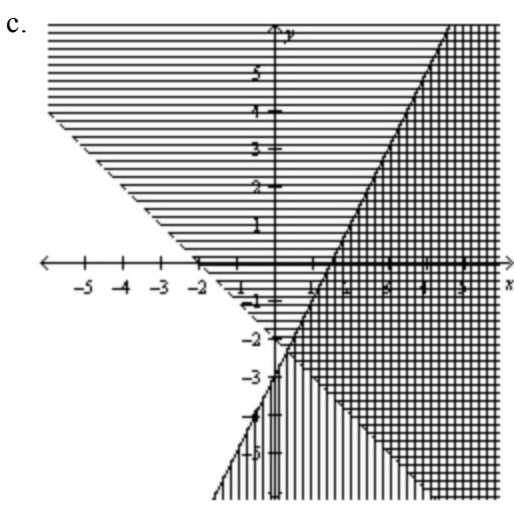
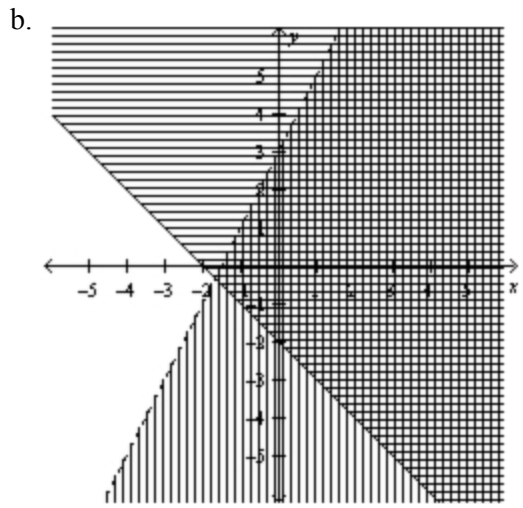
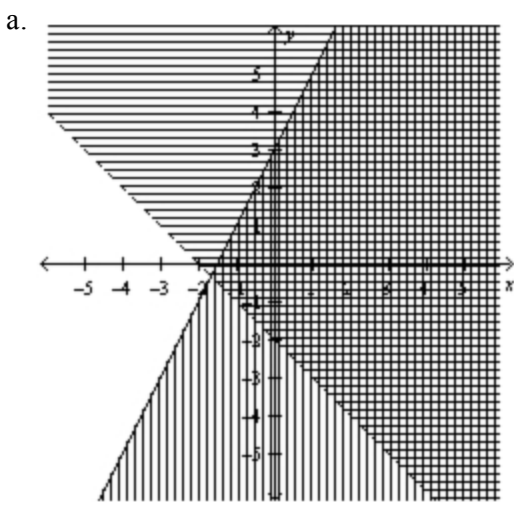
$y > 2x - 2$



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___ 45. $y \leq 2x + 3$

$y > -x - 2$



___ 46. Write $\sqrt{34p}$ in exponential form.

- a. $(34p)^{1/2}$
- b. $34p^{1/2}$
- c. $34^{1/2}p$
- d. $34p$

Solve the problem of exponential growth.

___ 47. The population of an island country increased from 452,000 to 485,000 from 2009 to 2010. Assuming this trend continues, what would the population be in 2018? Round to the nearest thousand.

- a. 740,000 b. 852,000
- c. 811,000 d. 914,000

Algebra I Final Review*Find the product.*

- ___ 48. $(5c + 6)^2$
a. $25c^2 + 60c + 36$ b. $25c^2 + 36c + 36$
c. $25c^2 + 36$ d. $10c + 12$

- ___ 49. $(b + 6)^2$
a. $b^2 + 12b + 36$ b. $b^2 + 36$
c. $b^2 + 36b + 36$ d. $2b + 12$

Find the product of each sum and difference.

- ___ 50. $(5c + 5)(5c - 5)$
a. $25c^2 - 25$ b. $25c^2 + 25c - 25$
c. $10c$ d. $25c^2 + 25$

Find the coordinates of the vertex of the graph of the function.

- ___ 51. $y = 4x^2 - 7x + 4$
a. $(0, 4)$ b. $(\frac{4}{7}, \frac{16}{7})$
c. $(\frac{7}{8}, \frac{15}{16})$ d. $(\frac{7}{4}, 4)$

Write the equation of the axis of symmetry.

- ___ 52. $y = 4x^2 + 6x - 5$
a. $x = -\frac{3}{2}$ b. $x = -\frac{3}{4}$
c. $x = -\frac{7}{2}$ d. $x = \frac{3}{4}$

- ___ 53. Dakota's math test grade was 7 points less than his science test grade. The sum of the grades was 183%. What did Dakota get on his math test?
a. 83% b. 88%
c. 93% d. 95%

Find the sum or difference.

- ___ 54. $(4a - 3a^2) - (-6a - 4)$
a. $3a^2 + 10a + 4$ b. $-3a^2 + 10a - 4$
c. $-3a^2 + 10a + 4$ d. $-3a^2 + 2a + 4$

Algebra I Final Review

Solve the equation.

___ 55. $12x^2 - 14x + 4 = 0$

a. $\{\frac{2}{3}, \frac{1}{2}\}$ b. $\{2, 3\}$

c. $\{-6, -8\}$ d. $\{6, 8\}$

___ 56. $6\sqrt{11}(7\sqrt{11} + 6\sqrt{5})$

a. $462 + 6\sqrt{5}$

b. $462 + \sqrt{5}$

c. $462 + 36\sqrt{55}$

d. $66 + 36\sqrt{55}$

___ 57. $\frac{17^{21}}{17^3}$

a. 1^7

b. 17^{18}

c. 1^{18}

d. 17^7

___ 58. $(4.1 \times 10^3)(6 \times 10^5)$

a. 0.246×10^{10}

b. 2.46×10^9

c. 2.46×10^7

d. 24.6×10^8

Name: _____ Class: _____ Date: _____

Algebra I Final Review

Answer Key

1. c

2. d

3. c

4. c

5. a

6. d

7. a

8. d

9. b

10. a

11. a

12. c

13. d

14. b

15. c

16. b

17. d

18. c

19. d

20. a

21. c

22. d

23. c

24. b

25. d

26. a

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27. a

28. b

29. b

30. b

31. c

32. d

33. d

34. c

35. c

36. b

37. c

38. a

39. b

40. b

41. b

42. c

43. a

44. d

45. a

46. a

47. b

48. a

49. a

50. a

51. c

52. b

53. b

54. c

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55. a

56. c

57. b

58. b