

Unit 1. Sets, Absolute Value, Order of Operations, and Simplifying Expressions

1) Simplify $8 - 4 \div 2 - 10 \div 2$.

- (a) 4 (b) 1 (c) -3 (d) -4

2) Simplify $12 \div \{2[(4 - 6)^2 - 8]\}$.

- (a) $-\frac{2}{3}$ (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) -24

3) Simplify $|-4| + |10| - |3|$.

- (a) 11 (b) 3 (c) -3 (d) 17

4) Simplify $|-3| - |-4|$.

- (a) 1 (b) -7 (c) 7 (d) -1

5) Simplify $3(x+2y) + 4(2x-5y)$.

- (a) $11x + 26y$ (b) $-3xy$ (c) $11x-14y$ (d) $11x-3y$

6) Simplify $-2a + 3(a+2) + 1$

- (a) $5a+7$ (b) $5a+3$ (c) $a+3$ (d) $a+7$

7) Evaluate $6z^2 + 3z - 2$ when $z = -3$.

- (a) 43 (b) -65 (c) 61 (d) -47

8) Evaluate $2ab - c$ when $a = -3$, $b = 2$, and $c = -1$.

- (a) 13 (b) 11 (c) -11 (d) -13

9) Identify the set of numbers that is described. $\{0,1,2,3, \dots\}$

- (a) Real numbers (b) Natural Numbers (c) Integers (d) Whole numbers

10) Identify the property. $3 + x = x + 3$

- (a) Commutative property of addition (b) Associative property of addition
(c) Distributive property (d) Inverse property

Unit 2. Linear Equations in One Variable

11) Solve $-3(x - 5) = 7$.

(a) $\left\{\frac{8}{3}\right\}$

(b) $\left\{-\frac{8}{3}\right\}$

(c) $\{-4\}$

(d) $\{-6\}$

12) Solve $5x - 5 = -12$.

(a) $\left\{\frac{7}{5}\right\}$

(b) $\left\{-\frac{7}{5}\right\}$

(c) $\left\{-\frac{17}{5}\right\}$

(d) $\{-35\}$

13) Solve $2x + 3 + 1 = 4x + 7x + 5$.

(a) $\{-9\}$

(b) $\left\{-\frac{1}{9}\right\}$

(c) $\left\{\frac{11}{2}\right\}$

(d) $\left\{\frac{1}{9}\right\}$

14) Solve $2(x + 3) + 7 = -2(3x + 5) + 5$.

(a) $\left\{\frac{1}{4}\right\}$

(b) $\left\{\frac{9}{4}\right\}$

(c) $\left\{-\frac{9}{4}\right\}$

(d) $\{0\}$

15) Solve $3(x + 2) - 5 = 4x - (x + 1)$.

(a) $\{2\}$

(b) All real numbers

(c) \emptyset

(d) $\{-1\}$

16) If four out of every seven groundhogs carry a gene for a defective enzyme, how many groundhogs carry the defective gene in a population of 840 groundhogs? Set up an equation and solve.

(a) 480 groundhogs

(b) 360 groundhogs

(c) 1470 groundhogs

(d) 36 groundhogs

17) Solve for z . $ky + mz = ab$.

(a) $z = \frac{ab-ky}{m}$

(b) $z = \frac{ab+ky}{m}$

(c) $p = ab - ky - m$

(d) $p = abm - kmy$

18) Solve for a . $\frac{a}{b} - c = d$.

(a) $a = bc + bd$

(b) $a = bc - bd$

(c) $a = \frac{c+d}{b}$

(d) $a = c + bd$

19) Convert from 85.7 inches to centimeters (1 in = 2.54 cm).

(a) 7.11 cm

(b) 1028.4 cm

(c) 33.77 cm

(d) 217.68 cm

20) The length of a rectangular deck is 8 meters more than twice the width. The perimeter of the deck is 46 m. Find the length of the deck.

- (a) 18 m (b) 6 m (c) 20 m (d) 5 m

21) A triangle is such that its medium side is three times as long as its shortest side, and its longest side is five inches longer than four times its shortest side. The perimeter of the triangle is 69 in. Find the length of the medium side of the triangle.

- (a) 24 in (b) 8 in (c) 21 in (d) 7 in

22) Jamaal buys his clothes at Super Discounts. On Saturday, he bought shoes regularly priced at \$40 for 25% off, and a jacket regularly priced at \$100 for 30% off. Including a 6% sales tax, what total amount will Jamaal pay?

- (a) \$106.00 (b) \$148.40 (c) \$110.00 (d) \$116.60

23) Jose deposits \$1500 of his tax refund into an account that earns simple annual interest. How much interest will his account earn after 6 years at an annual interest rate of 4%?

- (a) \$360 (b) \$365 (c) \$36 (d) \$380

Unit 3. Linear Inequalities in One Variable

24) Solve for x. $2(4x + 1) < 18$

- (a) $x < 2$ (b) $x < \frac{17}{8}$ (c) $x > 2$ (d) $x > \frac{17}{8}$

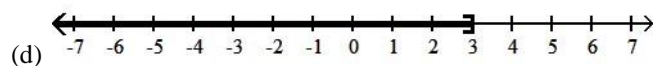
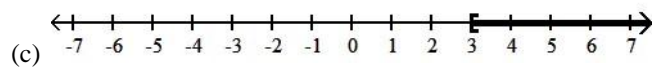
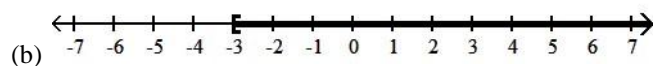
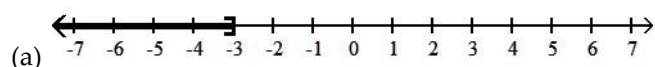
25) Solve for x. $2x+1 < 3x+4$

- (a) $(-\infty, 3)$ (b) $(3, \infty)$ (c) $(-\infty, -3)$ (d) $(-3, \infty)$

26) Solve for x. $9 - 2x \geq 5 - x$

- (a) $x \leq 4$ (b) $x \leq -4$ (c) $x \geq -4$ (d) $x \geq 4$

27) Solve for x and graph. $7 - 5(x + 2) \geq 6(3 - 2x)$



Unit 4. Rules of Integer Exponents28) Simplify $(a^2b^3)^2$.

(a) a^4b^9

(b) a^2b^9

(c) a^4b^6

(d) a^4b^5

29) Simplify $\left(\frac{2x^3}{3y}\right)^2$.

(a) $\frac{4x^5}{6y^2}$

(b) $\frac{2x^6}{3y^2}$

(c) $\frac{4x^6}{9y^2}$

(d) $\frac{4x^9}{9y^2}$

30) Simplify $\frac{5x^2y}{x^3}$.

(a) $5x^5y$

(b) $\frac{5y}{x}$

(c) $5xy$

(d) $\frac{5x}{y}$

31) Simplify $(x^2y^{-1})^{-3}$.

(a) $\frac{y^3}{x^5}$

(b) $\frac{y^3}{x^6}$

(c) $\frac{1}{xy^4}$

(d) $\frac{y^4}{x^5}$

32) Simplify $\frac{x^{-3}y^6}{x^{-4}y^4}$.

(a) xy^2

(b) $\frac{y^2}{x}$

(c) $\frac{y^2}{x^7}$

(d) x^7y^2

33) Simplify $\left(\frac{x^3}{4y}\right)^{-2}$.

(a) $\frac{4y}{x^6}$

(b) $\frac{4x^6}{y^4}$

(c) $\frac{16y^2}{x^6}$

(d) $\frac{-8y^2}{x^6}$

34) Simplify $(a^2b^0c^{-1})^3$.

(a) $a^5b^3c^2$

(b) $\frac{a^6b^3}{c^3}$

(c) $\frac{a^5}{c^3}$

(d) $\frac{a^6}{c^3}$

35) Simplify $\frac{x^{-2}y^{-1}z^2}{x^3y^0z}$.

(a) $\frac{z}{x^5y}$

(b) $\frac{z}{x^5}$

(c) $\frac{x^5z}{y}$

(d) $\frac{yz}{x^5}$

36) Write the number in scientific notation.

The calculated atomic radius of Potassium is 0.000000000243 m.

(a) 2.43×10^{-10} m

(b) 243×10^{-12} m

(c) 2.43×10^{10} m

(d) 24.3×10^{-11} m

37) Write the number in scientific notation.

The average distance from Earth to Mars is 225,000,000 Km.

- (a) 22.5×10^7 Km (b) 2.25×10^8 Km (c) 2.25×10^{-8} Km (d) 225×10^6 Km

38) Write the number in standard form. 7.96×10^{-2}

- (a) 0.00796 (b) 0.0796 (c) 796 (d) 7,960

Unit 5. Polynomial Expressions, Quadratic Expressions, and Quadratic Equations

39) Perform the indicated operation and simplify. $(-u^2 + 4u - 10) + (5u^3 - 2u^2 + 6)$

- (a) $(5u^3 + 3u^2 + 4u - 4)$ (b) $(5u^3 - u^2 + 4u - 4)$
(c) $(5u^3 - 3u^2 + 4u + 4)$ (d) $(5u^3 - 3u^2 + 4u - 4)$

40) Perform the indicated operation and simplify. $(9x^2 + 5x - 6) - (2x^2 - 3x - 4)$

- (a) $(7x^2 + 2x - 2)$ (b) $(7x^2 + 8x - 2)$
(c) $(7x^2 + 8x - 10)$ (d) $(7x^2 + 2x - 10)$

41) Perform the indicated operation and simplify. $4x^3(2x^2 - 7)$

- (a) $8x^5 - 28x^3$ (b) $8x^6 - 7$ (c) $6x^5 - 28x^3$ (d) $8x^6 - 28x^3$

42) Perform the indicated operation and simplify. $(5x + 4)(5x - 4)$

- (a) $25x^2 + 16$ (b) $25x^2 + 40x + 16$ (c) $25x^2 - 16$ (d) $25x^2 - 40x - 16$

43) Perform the indicated operation and simplify. $(3m - 2)^2$

- (a) $9m^2 - 4$ (b) $9m^2 + 4$ (c) $9m^2 - 12m - 4$ (d) $9m^2 - 12m + 4$

44) Perform the indicated operation and simplify. $\frac{8x^7 + 6x^5 - 20x^3}{-2x^2}$

- (a) $-4x^5 - 3x^3 + 10x$ (b) $6x^5 + 4x^3 - 22x$ (c) $-4x^9 - 3x^7 + 10x^5$ (d) $4x^5 + 3x^3 - 10x$

45) Factor completely. $4x^4 - 8x^3 - 4x^2 + 16x$

(a) $4x(x^3 - 2x^2 - x + 4)$

(b) $4x(x^4 - 2x^3 - x^2 + 4x)$

(c) $4x(x^3 - 2x^2 + x - 4)$

(d) $4(x^4 - 2x^3 - x^2 + 4x)$

46) Factor completely. $x^2 - 16y^2$

(a) $(x + 8y)(x - 8y)$

(b) $(x + 4y)(x - 4y)$

(c) $(x - 8y)(x + 2y)$

(d) $(x - 4y)(x - 4y)$

47) Factor completely. $x^2 - 4x + 2xy - 8y$

(a) $(x + 4)(x + 2y)$

(b) $(x + 4)(x - 2y)$

(c) $(x - 4)(x + 2y)$

(d) $(x - 4)(x - 2y)$

48) Identify a factor of the polynomial. $y^2 + yb - ya - ab$

(a) $(y - a)$

(b) $(y - b)$

(c) $(y + a)$

(d) $(y^2 + ab)$

49) Identify a factor of the trinomial. $x^2 - 7x + 12$

(a) $x - 3$

(b) $x + 4$

(c) $x - 6$

(d) $x + 3$

50) Identify a factor of the trinomial. $6x^2 + x - 1$

(a) $6x - 1$

(b) $2x + 1$

(c) $3x + 1$

(d) $6x + 1$

51) Identify a factor of the trinomial. $4x^2 - 31x - 8$

(a) $4x - 1$

(b) $x + 8$

(c) $2x + 1$

(d) $x - 8$

52) Solve $6x^2 - 7x - 3 = 0$.

(a) $\left\{-\frac{2}{3}, -\frac{1}{3}\right\}$

(b) $\left\{-\frac{1}{3}, \frac{3}{2}\right\}$

(c) $\left\{\frac{1}{3}, \frac{3}{2}\right\}$

(d) $\left\{-\frac{2}{3}, \frac{6}{7}\right\}$

53) Solve $5x^2 - 8 = 18x$.

(a) $\{0, 8\}$

(b) $\left\{-4, \frac{2}{5}\right\}$

(c) $\left\{-\frac{5}{8}, \frac{8}{5}\right\}$

(d) $\left\{-\frac{2}{5}, 4\right\}$

Unit 6. Rational Expressions

54) For which value(s) is the following expression undefined? $\frac{x^2-9}{x-2}$

(a) $x = 2$

(b) $x = 9$

(c) $x = 3$ and $x = -3$

(d) $x = \frac{9}{2}$

55) For which value(s) is the following expression undefined? $\frac{x-4}{x^2-5x+6}$

- (a) $x = 4$ (b) $x = 6$ (c) $x = 2$ and $x = 3$ (d) $x = 6$ and $x = 1$

56) Simplify $\frac{2x^2+x-15}{4x^2-16x+15}$.

- (a) $\frac{x+3}{2x-3}$ (b) $\frac{x+3}{2x+3}$ (c) $\frac{x-3}{2x-3}$ (d) $\frac{2x+1}{4(x-4)}$

57) Simplify $\frac{2x^2-8x+6}{4-4x}$.

- (a) $\frac{-x+3}{2}$ (b) $\frac{-x+1}{2}$ (c) $\frac{x-3}{4}$ (d) $\frac{x+3}{4}$

58) Perform the indicated operation and simplify. $\frac{x^2+2x-15}{x^2-16} \cdot \frac{x-4}{x^2+5x}$

- (a) $\frac{x+3}{x^2+4x}$ (b) $\frac{x-3}{x^2+4x}$ (c) $\frac{x-3}{x+4}$ (d) $\frac{x+3}{x}$

59) Perform the indicated operation and simplify. $\frac{x^2-3x-4}{x^2-4} \div \frac{x-4}{x+2}$

- (a) $-\frac{1}{2}$ (b) $\frac{x+1}{x+2}$ (c) $\frac{1}{x-2}$ (d) $\frac{x+1}{x-2}$

60) Perform the indicated operation and simplify. $\frac{-4x+3}{x^2} + \frac{x-3}{x^2}$

- (a) $-\frac{3}{x}$ (b) $\frac{3}{x}$ (c) $-\frac{3}{2x}$ (d) $\frac{-3x-6}{x^2}$

61) Perform the indicated operation and simplify. $\frac{-4a+3}{3a^2} - \frac{a-5}{3a^2}$

- (a) $\frac{-5a-2}{3a^2}$ (b) $\frac{-5a+8}{6a^2}$ (c) $\frac{-5a+8}{3a^2}$ (d) $\frac{-5a-2}{6a^2}$

Unit 7. Radical Expressions

62) Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{44x^5}$$

- (a) $4x^4\sqrt{11x}$ (b) $2x^2\sqrt{11x}$ (c) $2x\sqrt{11x^3}$ (d) $2\sqrt{11x^5}$

63) Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{24a^{11}}$$

(a) $2a^5\sqrt{6a}$

(b) $4a^{10}\sqrt{11a}$

(c) $2a\sqrt{6a^9}$

(d) $2\sqrt{6a^{11}}$

64) Add or subtract the radical expressions as indicated.

$$9\sqrt{2} + \sqrt{162} - 3\sqrt{50}$$

(a) $90\sqrt{2}$

(b) $6\sqrt{114}$

(c) $3\sqrt{2}$

(d) $15\sqrt{2}$

65) Add or subtract the radical expressions as indicated.

$$10\sqrt{2} + \sqrt{200} - 3\sqrt{32}$$

(a) $62\sqrt{2}$

(b) $72\sqrt{2}$

(c) $8\sqrt{2}$

(d) $7\sqrt{170}$

66) Multiply the radical expressions.

$$2\sqrt{5} \cdot 5\sqrt{15}$$

(a) $10\sqrt{3}$

(b) $6\sqrt{5}$

(c) $250\sqrt{2}$

(d) $50\sqrt{3}$

67) Multiply the radical expressions. Assume that all variables represent positive real numbers.

$$3a\sqrt{5} \cdot 5a\sqrt{15}$$

(a) $375a\sqrt{2}$

(b) $15a\sqrt{3}$

(c) $16a^2\sqrt{5}$

(d) $75a^2\sqrt{3}$

68) On a sunny day, a tree and its shadow form the sides of a right triangle. If the hypotenuse is 50 m long and the tree is 40 m tall, how long is the shadow?

(a) 30 m

(b) 64 m

(c) 90 m

(d) 100 m

69) Rationalize the denominator for $\frac{10}{\sqrt{5}}$.

(a) $10\sqrt{5}$

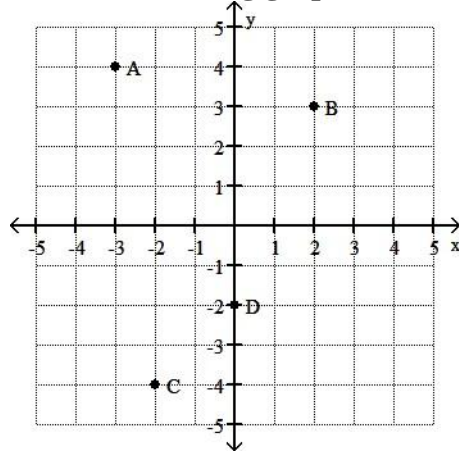
(b) 2

(c) $\sqrt{2}$

(d) $2\sqrt{5}$

Unit 8. The Rectangular Coordinate System

Use the following graph for numbers 69-72.



70) Express the point C as an ordered pair.

- (a) $(-4, 2)$ (b) $(-2, -4)$ (c) $(-2, 0)$ (d) $(2, 4)$

71) The point B lies in which quadrant?

- (a) Quadrant I (b) Quadrant II (c) Quadrant III (d) Quadrant IV

72) The point D lies on the x axis?

- (a) True (b) False

73) Which point is located is at $(-3, 4)$?

- (a) point A (b) point B (c) point C (d) point D

Unit 9 : Slopes and Lines74) Determine whether the point $(-3, 5)$ is a solution to $4x + 2y = -3$.

- (a) Solution (b) Not a solution

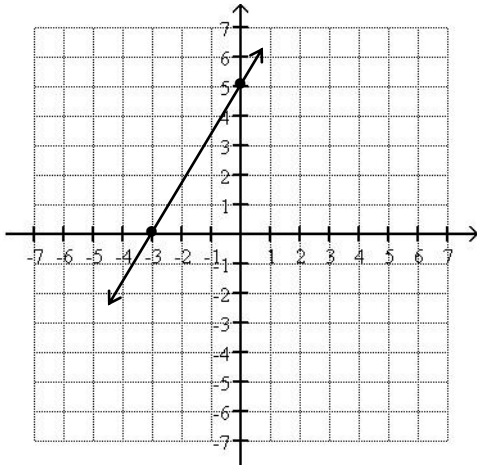
75) Express the y-intercept of the graph of $9x - 7y = -14$ as an ordered pair.

- (a) $(0, -2)$ (b) $(0, 2)$ (c) $\left(-\frac{14}{9}, 0\right)$ (d) $\left(\frac{14}{9}, 0\right)$

76) Express the x-intercept of the graph of $6x + 11y = 18$ as an ordered pair.

- (a) $(0, 3)$ (b) $(3, 0)$ (c) $\left(0, \frac{18}{11}\right)$ (d) $\left(\frac{18}{11}, 0\right)$

77) Find the slope of the line shown below.



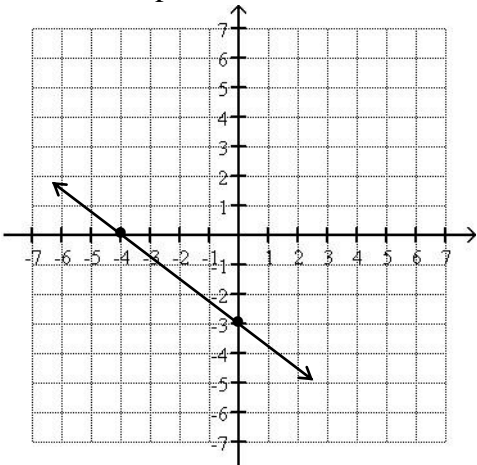
(a) $\frac{5}{3}$

(b) $-\frac{5}{3}$

(c) $\frac{3}{5}$

(d) $-\frac{3}{5}$

78) Find the slope of the line shown below.



(a) $-\frac{3}{4}$

(b) $\frac{3}{4}$

(c) $-\frac{4}{3}$

(d) $\frac{4}{3}$

79) Find the slope of the line $3x - 4y = 16$.

(a) $\frac{4}{3}$

(b) $-\frac{3}{4}$

(c) $\frac{3}{4}$

(d) -3

80) Find the slope of the line $6x + 5y = -12$.

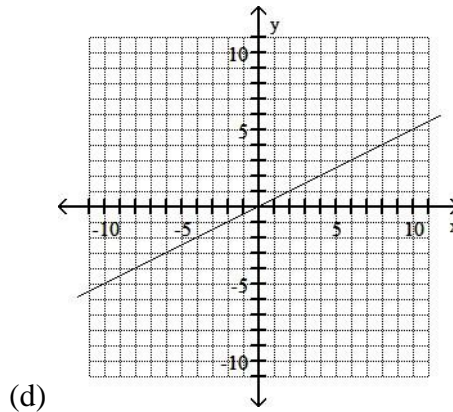
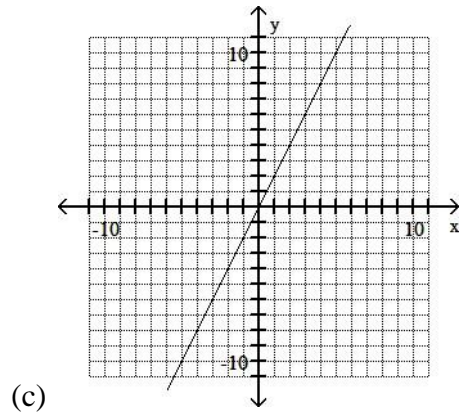
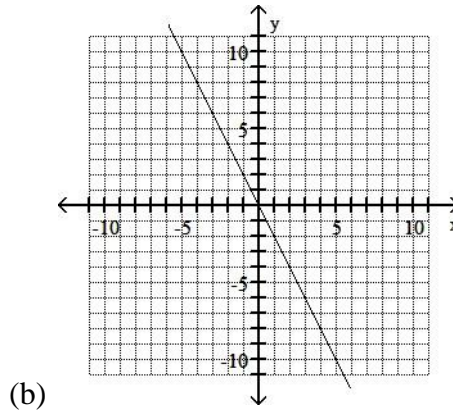
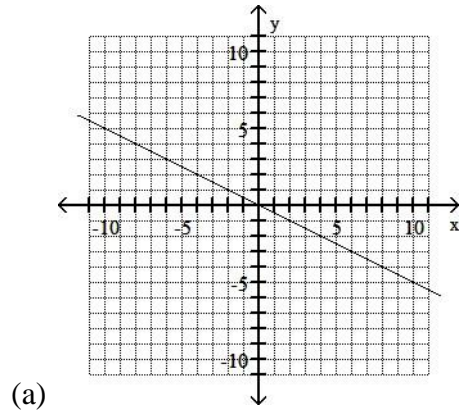
(a) $-\frac{5}{6}$

(b) $\frac{6}{5}$

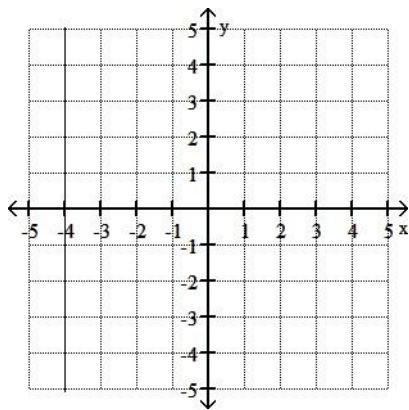
(c) $-\frac{6}{5}$

(d) -6

81) Which of the following graphs represents the line through $(1, 2)$ and $(-1, -2)$?



82) Determine an equation of the graph represented below.



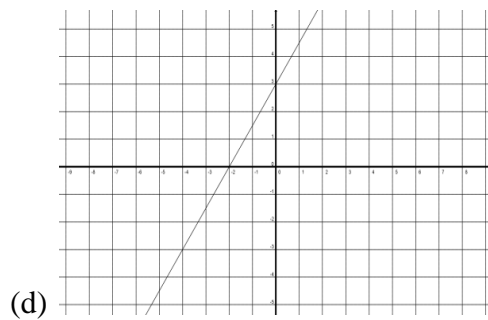
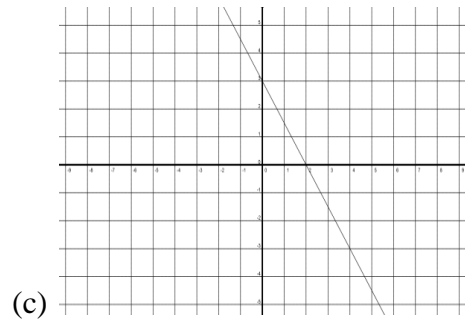
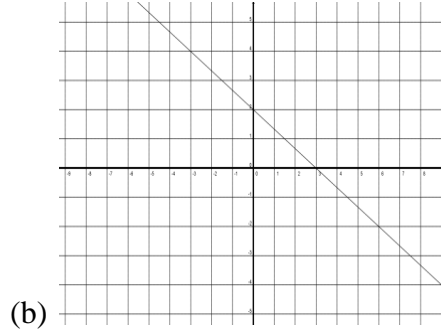
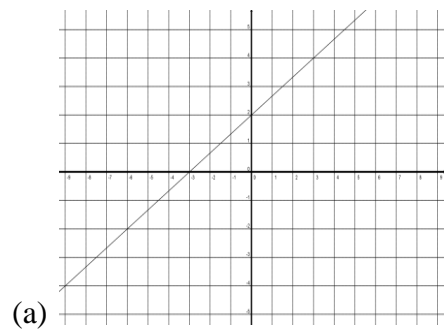
(a) $y + 4 = 0$

(b) $x + 4 = 0$

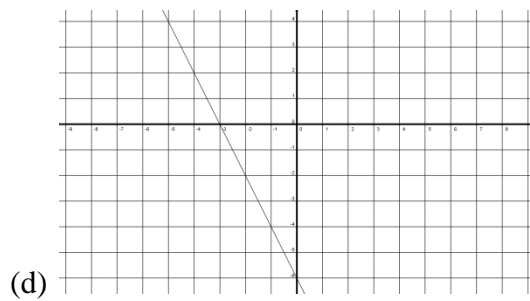
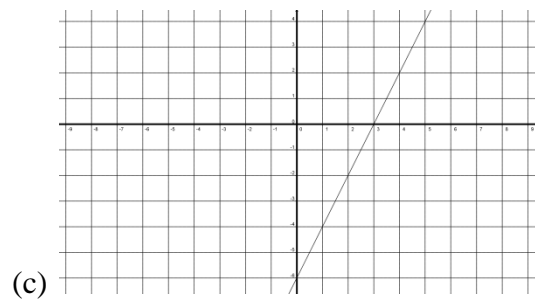
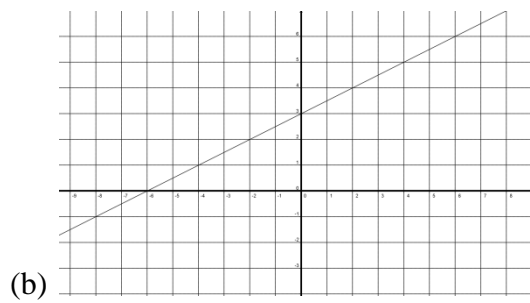
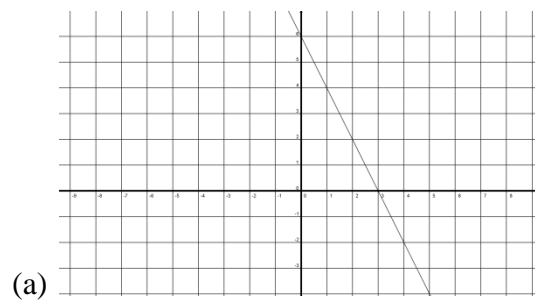
(c) $y - 4 = 0$

(d) $x - 4 = 0$

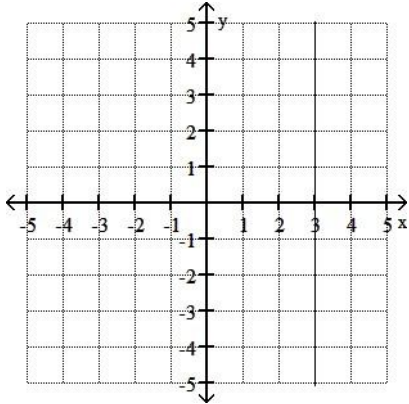
83) Graph $6x + 9y = 18$ using the x-intercept and y-intercept.



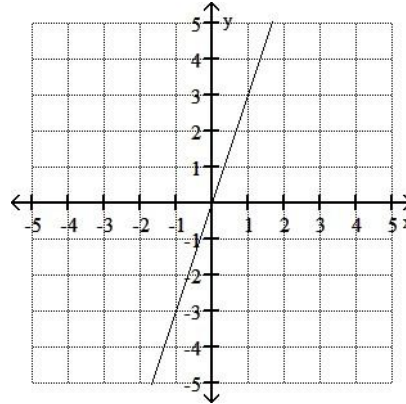
84) Which of the following graphs represents $y = 2x - 6$?



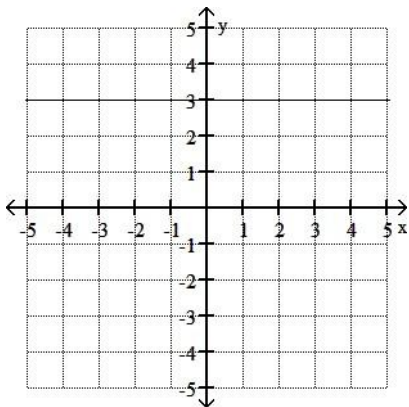
85) Which of the following graphs represents $y = 3$?



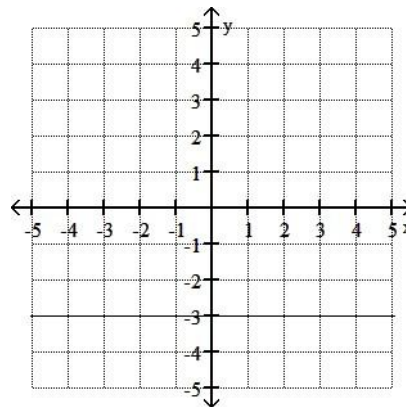
(a)



(b)



(c)



(d)

86) Find the slope of the line with equation $x = -4$.

(a) -4

(b) 4

(c) 0

(d) undefined

87) Find the slope of the line that passes through $(-4, 2)$ and $(-2, 3)$.

(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$

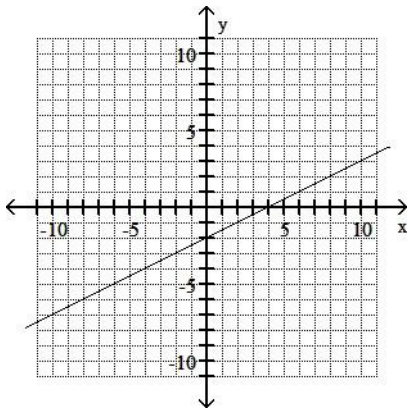
(c) 2

(d) $-\frac{1}{6}$

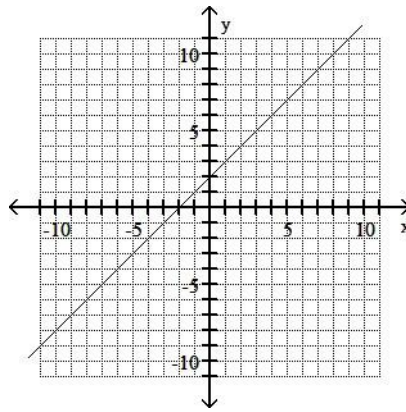
88) Find the y intercept of the line $y = 5$.

(a) $(0, 5)$ (b) $(5, 0)$ (c) $(0, -5)$ (d) $(0,0)$

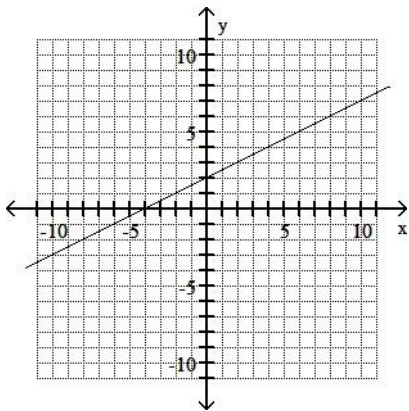
89) Which of the following graphs represents the line that passes through $(0, 2)$ with slope $\frac{1}{2}$?



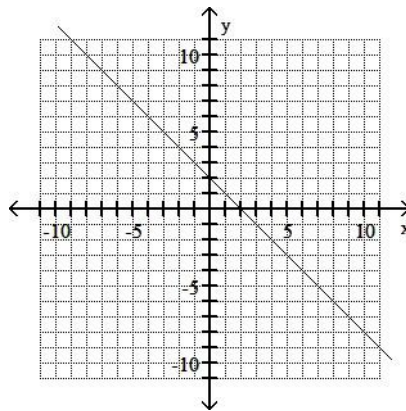
(a)



(b)



(c)



(d)

90) Which of the following points would be an additional point on the line that passes through $(1, 3)$ with slope -1 ?

(a) $(2, 2)$

(b) $(2, 4)$

(c) $(0, 2)$

(d) $(0, 4)$

Answers

- | | | |
|-------|-------|-------|
| 1) B | 40) B | 80) C |
| 2) C | 41) A | 81) C |
| 3) A | 42) C | 82) B |
| 4) D | 43) D | 83) B |
| 5) C | 44) A | 84) C |
| 6) D | 45) A | 85) C |
| 7) A | 46) B | 86) D |
| 8) C | 47) C | 87) A |
| 9) D | 48) A | 88) A |
| 10) A | 49) A | 89) C |
| 11) A | 50) B | 90) A |
| 12) B | 51) D | |
| 13) B | 52) B | |
| 14) C | 53) D | |
| 15) C | 54) A | |
| 16) A | 55) C | |
| 17) A | 56) A | |
| 18) A | 57) A | |
| 19) D | 58) B | |
| 20) A | 59) D | |
| 21) A | 60) A | |
| 22) D | 61) C | |
| 23) A | 62) B | |
| 24) A | 63) A | |
| 25) D | 64) C | |
| 26) A | 65) C | |
| 27) C | 66) D | |
| 28) C | 67) D | |
| 29) C | 68) A | |
| 30) B | 69) D | |
| 31) B | 70) B | |
| 32) A | 71) A | |
| 33) C | 72) B | |
| 34) D | 73) A | |
| 35) A | 74) B | |
| 36) A | 75) B | |
| 37) B | 76) B | |
| 38) B | 77) A | |
| 39) D | 78) A | |
| | 79) C | |