

**Cumulative Review**

For use after Chapters 1-4

**Evaluate the expression for the given values of  $x$  and  $y$ . (1.2)**

1.  $\frac{x^2}{3y+2}$  when  $x = 3$  and  $y = -5$

2.  $x^3 + 2y^3$  when  $x = -3$  and  $y = 2$

3.  $\frac{x+y}{x-y}$  when  $x = 5$  and  $y = -6$

4.  $x^2 + 2x - 3y$  when  $x = -4$  and  $y = 2$

**Solve the equation. (1.3)**

5.  $3(x-2) = -4(-x+7) + 18$

6.  $\frac{1}{2}x + \frac{1}{3} = x + \frac{7}{3}$

7.  $1.5x + 8 = 11 + 0.5x - 1$

8.  $-(x-2) + 3x = -3(x+4) + 15$

**Solve the inequality. (1.6)**

9.  $3x + 1 \leq 8x - 4$

10.  $10 > 3x + 1 > 7$

11.  $2x + \leq 8$  or  $2x - 3 \geq 7$

12.  $4x - 2 \geq 8$

13.  $2x + 3 < 8$

14.  $\frac{1}{2}x + 4 > 6$

**Tell whether the relation is a function. (2.1)**15. 

$x$	1	2	4	5	5
$y$	2	3	3	4	-6

16. 

$x$	-2	-1	3	4
$y$	0	0	0	0

17. 

$x$	0	1	4	9	16
$y$	0	1	2	3	4

18. 

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

19. 

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

20. 

$x$	-2	-1	0	1	2
$y$	-6	-3	1	3	6

**Draw the line with the given information. (2.3)**

21.  $m = 3, b = -5$

22.  $m = \frac{2}{3}, b = -5$

23.  $x$ -intercept is  $-2$ ,  $y$ -intercept is  $4$

24.  $x$ -intercept is  $4$ ,  $y$ -intercept is  $-3$

**Write an equation of the line that has the given slope and  $y$ -intercept. (2.4)**

25.  $m = 5, b = -2$

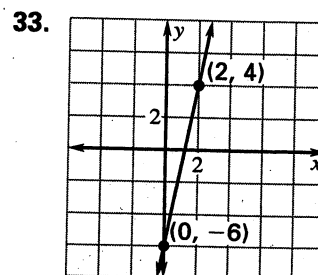
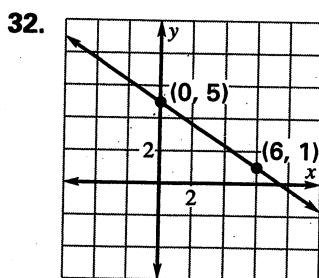
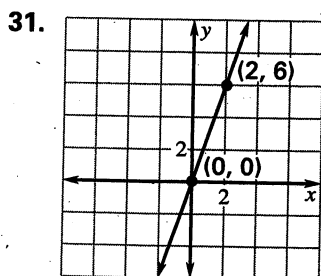
26.  $m = -5, b = -3$

27.  $m = \frac{1}{2}, b = 4$

28.  $m = -\frac{2}{3}, b = 6$

29.  $m = -\frac{2}{5}, b = -3$

30.  $m = 0, b = 3$

**Write an equation of the line. (2.4)**

Solve the system using the substitution method or the linear combination method. (3.2)

34.  $x - 5y = 10$

$2x - 3y = 13$

37.  $4x + 3y = 5$

$-6x - 2y = -5$

35.  $3x - 4y = 20$

$-2x + 3y = -14$

38.  $3x + 6y = 5$

$x + y = 1$

36.  $-5x + 4y = 5$

$2x - 5y = -2$

39.  $0.2x + 0.3y = 3.8$

$0.5x - 0.7y = 0.8$

Write the linear equation as a function of  $x$  and  $y$ . Then evaluate the function for the given values. (3.5)

40.  $x - 6y - z = 12, f(4, 2)$

41.  $-x - 2y + z = 8, f(-3, 2)$

42.  $2x + 3y + 2z = 8, f(-3, -6)$

43.  $-2x + 5y - 3z = 6, f(9, 0)$

44.  $-3x + 6y - 2z = -10, f(2, 4)$

45.  $-2x + 4y - 3z = 9, f(-3, 9)$

Use any algebraic method to solve the system. (3.6)

46.  $5x + 2y - 2z = 6$

$-3x + 3y + z = 1$

$5x - 5y + z = -7$

47.  $x + 2y + 3z = -10$

$2x - 2y + z = -9$

$4x + y + 3z = -5$

48.  $2x + 3y - z = 7$

$-2x + 5y + 3z = -13$

$3x + 3y - 2z = 12$

Solve the matrix equation for  $x$  and  $y$ . (4.1)

49.  $\begin{bmatrix} 3x & -9 \\ -8 & 7 \end{bmatrix} = \begin{bmatrix} 15 & y \\ -8 & 7 \end{bmatrix}$

50.  $\begin{bmatrix} 4x & -3 \\ -2 & 8 \end{bmatrix} + \begin{bmatrix} 4 & 2 \\ -3 & 1 \end{bmatrix} = \begin{bmatrix} 16 & -1 \\ y & 9 \end{bmatrix}$

51.  $3x \begin{bmatrix} 3 & -4 \\ 2 & y \end{bmatrix} = \begin{bmatrix} 9 & -12 \\ 6 & 15 \end{bmatrix}$

52.  $\begin{bmatrix} 3 & 2 \\ 1 & -3 \end{bmatrix} + \begin{bmatrix} 5 & x \\ -3 & 7 \end{bmatrix} = \begin{bmatrix} 8 & 9 \\ -2 & y \end{bmatrix}$

Use Cramer's rule or an inverse matrix to solve the system. (4.3, 4.5)

53.  $2x - y = 11$

$3x + 8y = 7$

54.  $3x - 6y = 3$

$-5x - 8y = 4$

55.  $x + 5y - 2z = 10$

$2x - 8y - 3z = 2$

$x + y + z = 6$

56. **Tickets** Tickets to the Spring Concert cost \$3 for students and \$5 for adults. Sales totaled \$1534. Twice as many adult tickets as students tickets were sold. How many adult tickets were sold? (3.2)

57. **Kelvin** According to kinetic theory,  $-273$  degrees Celsius is the temperature at which gas molecules would cease to move; this is called the absolute zero of temperature. In practice all gases, on cooling, liquefy or solidify before that temperature is reached. This temperature,  $-273^\circ\text{C}$ , is taken as the zero point on the Kelvin scale, so Kelvin temperature is 273 higher than Celsius temperature. If the Kelvin temperature of a gas is 33 more than six times the Celsius temperature, what is the temperature of the gas in degrees Celsius? (4.3)

For use after Chapters 1-5

**Evaluate the expression. (1.1)**

1.  $-3 + 3(-2 + 5)^2$

2.  $(-5)^2$

3.  $-5^2$

**Simplify and evaluate the expression for the given value of the variable. (1.2)**

4.  $x^2 + 8 - x$  when  $x = -2$

5.  $3a^2 + a - 2a^2$  when  $a = 3$

6.  $2(n + 1) - 4(n - 2)$  when  $n = -1$

**Solve the equation. (1.3)**

7.  $\frac{1}{2}x + \frac{1}{3} = 2x - \frac{1}{5}$

8.  $3(2x - 1) = -4(-x + 1) + 5$

**Solve the inequality and draw its graph. (1.5)**

9.  $3x + 1 < 2x + 3$

10.  $2x - 3 \geq 5x + 1$

11.  $-4x + 3 > 3x$

**Solve the compound inequality. (1.6)**

12.  $3x + 1 < 2x + 9$  or  $5x + 3 < 53$

13.  $-4 < -2x + 4 < 12$

**Solve the absolute value equation or inequality. (1.7)**

14.  $|3x - 5| = 10$

15.  $|4x - 2| > 10$

16.  $|x - 2| < 6$

**Evaluate the function when  $x = 5$ . (2.1)**

17.  $g(x) = -x^2 + 2$

18.  $f(x) = (-x)^2 + 2$

19.  $f(x) = (x - 3)^2 + 5$

**Find the slope of the line passing through the points. (2.2)**

20.  $(4, -3)$  and  $(6, 5)$

21.  $(2, 0)$  and  $(8, 0)$

22.  $(5, 8)$  and  $(5, 14)$

**Tell whether the two lines are *parallel*, *perpendicular*, or *neither*. (2.2)**

23. Line 1: through  $(-5, 3)$  and  $(8, 4)$

24. Line 1: through  $(5, -9)$  and  $(-2, 5)$

Line 2: through  $(2, 7)$  and  $(1, 20)$

Line 2: through  $(6, 3)$  and  $(9, 9)$

**Write the equation with the given slope and y-intercept. (2.3)**

25.  $m = 5; b = 3$

26.  $m = 0; b = 4$

27.  $m = \frac{2}{3}; b = -2$

**Graph the equation. (2.3)**

28.  $y = \frac{-2}{3}x + 5$

29.  $y = 4x - 6$

30.  $y = 5x$

**Write the equation of the line that passes through the given point and has the given slope. (2.4)**

31.  $(5, -1); m = \frac{1}{3}$

32.  $(6, 0); m = -2$

33.  $(4, 5); m = 1$

**Graph the inequality. (2.6)**

34.  $y \geq \frac{2}{3}x - 3$

35.  $y < -x + 5$

36.  $2x - y < 4$

**Solve the linear system. (3.2, 3.6)**

37.  $2x + 3y = 14$   
 $-x + 5y = 19$

38.  $3x + 5y = 14$   
 $2x - 3y = -16$

39.  $2x + 3y - z = 11$   
 $4x - y + 2z = -1$   
 $3x + 2y + 2z = 0$

**Graph the system of linear inequalities. (3.5)**

40.  $y < x - 2$   
 $y > -3x + 1$

41.  $y > 3x - 2$   
 $y > -2x + 1$

42.  $3x + y \geq 5$   
 $-2x + y \leq 3$

**Perform the indicated operation. (4.1)**

43.  $\begin{bmatrix} 1 & -3 \\ 6 & 2 \end{bmatrix} + 3\begin{bmatrix} -3 & 5 \\ 2 & 0 \end{bmatrix}$

**Use Cramer's Rule to solve the system. (4.3)**

44.  $2x + 3y = 11$   
 $x - 4y = -11$

45.  $-2x + 2y = 0$   
 $5x - 3y = 4$

46.  $4x - 2y + 3z = 14$   
 $2x + y - 5z = 5$   
 $-3x - 2y + 5z = -7$

**Use matrices to solve the linear system. (4.5)**

47.  $-2x + 4y = 22$   
 $3x - y = -13$

48.  $3x - 2y = 7$   
 $5x + 4y = -3$

49.  $x + 2y - 3z = 10$   
 $2x - 3y + 4z = -10$   
 $-2x + 3y - 5z = 13$

**Graph the quadratic function. Label the vertex and the axis of symmetry. (5.1, 5.3)**

50.  $y = (x - 3)^2 + 5$

51.  $y = 3(x - 1)(x + 1)$

52.  $y = 3x^2 + 6x - 2$

**Solve the equation. (5.3, 5.5)**

53.  $3(x - 5)^2 = 27$

54.  $x^2 + 12x + 3 = 0$

55.  $x^2 + 6x + 8 = 0$

**Write the expression as a complex number in standard form. (5.4)**

56.  $(4 - 3i) - (2 + 5i)$

57.  $(7 + 3i)(2 - i)$

58.  $(-6 + 2i) + (3 - 5i)$

59.  $(-3 - 2i)(4 + 5i)$

60.  $\frac{3 + 2i}{4 - i}$

61.  $\frac{4 + i}{4 - i}$

Also:

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