

Write the equation of the line with the given slope and y-intercept.

1) Slope: 3; y-intercept: 6

$$y = 3x + 6$$

2) slope:  $\frac{1}{2}$ ; y-intercept: -5

$$y = \frac{1}{2}x - 5$$

Write an equation of the line that passes through the given point and has the given slope  $m$ .

3) (3, 8);  $m = 2$

$$8 = 2(3) + b$$

$$8 = 6 + b$$

$$2 = b$$

$$y = 2x + 2$$

4) (-6, 3);  $m = \frac{2}{3}$

$$3 = \frac{2}{3}(-6) + b$$

$$3 = -4 + b$$

$$7 = b$$

$$y = \frac{2}{3}x + 7$$

Write an equation of the line that passes through the given points.

5) (2, 4) and (5, 13)

$$m = \frac{13-4}{5-2} = \frac{9}{3} = 3$$

$$y = 3x + b$$

$$4 = 3(2) + b$$

$$b = -2$$

Graph the equation.

$$y = -2x + 3$$

6)  $(2, \frac{1}{3})$ , (6, 3)

$$\frac{3 - \frac{1}{3}}{6 - 2} = \frac{\frac{8}{3}}{4} = \frac{8}{3} \cdot \frac{1}{4} = \frac{2}{3}$$

$$3 = \frac{2}{3}(6) + b$$

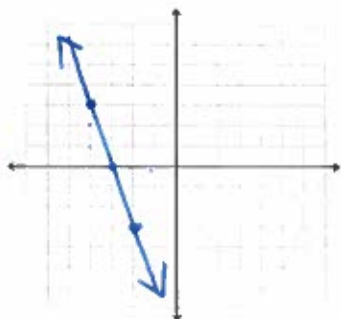
$$3 = \frac{16}{3} + b$$

$$-2\frac{1}{3} = b$$

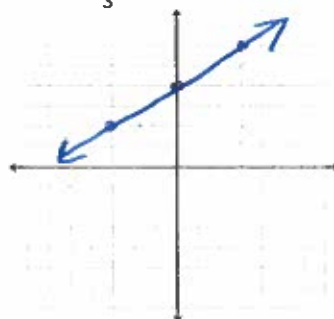
$$y = \frac{2}{3}x - 2\frac{1}{3}$$

7)  $y - 3 = -3(x + 4)$

through  
(-4, 3)  
slope  $-\frac{3}{1}$



8)  $y - 6 = \frac{2}{3}(x - 3)$



through (3, 6)  
slope  $\frac{2}{3}$

Write an equation in point-slope form of the line that passes through the given points.

9) (-4, 2) and (-2, 16)

$$m = \frac{16-2}{-2-(-4)} = \frac{14}{2} = 7$$

$$y - 2 = 7(x + 4)$$

or

$$y - 16 = 7(x + 2)$$

10) (10, -2), (12, -6)

$$m = \frac{-6-(-2)}{12-10} = \frac{-4}{2} = -2$$

$$y + 2 = -2(x - 10)$$

or

$$y + 6 = -2(x - 12)$$

$$Ax + By = C$$

Write an equation in standard form of the line that passes through the given point and has the given slope  $m$  or that passes through the two given points.

11) (1, -2), (-2, 4)

$$m = \frac{4 - (-2)}{-2 - 1} = \frac{6}{-3} = -2 = m$$

$$y - y_1 = m(x - x_1)$$

$$y + 2 = -2(x - 1)$$

$$y + 2 = -2x + 2$$

$$\begin{array}{l} -2 \longrightarrow -2 \\ +2x \qquad +2x \\ y = -2x + 0 \end{array}$$

$$2x + y = 0$$

Write an equation of the line that passes through the given point and is parallel to the given line.

12) (8, -3),  $y = \frac{3}{4}x + 5$  only get slope from this equation.

$$m = \frac{3}{4}$$

$$y + 3 = \frac{3}{4}(x - 8) \quad \text{or} \quad y = \frac{3}{4}x - 9$$

same slope

Write an equation of the line that passes through the given point and is perpendicular to the given line.

13) (15, -11),  $y = \frac{3}{5}x - 8$

$$m = \frac{3}{5}$$

$$m_{\perp} = -\frac{5}{3}$$

$$y + 11 = -\frac{5}{3}(x - 15) \quad \text{-reciprocal}$$

$$\text{or} \\ y = -\frac{5}{3}x + 14$$

Use your calculator to solve the following problems.

Make a scatter plot of the data in the table. Draw a line of fit. Write an equation of the line.

14)

X	1	2	3	3.5	4	4.5	5
Y	20	35	40	55	60	45	60

Make a scatter plot of the data. Find the equation of the best-fitting line. Approximate the value of  $y$  for  $x=7$ .

15)

X	0	1	3	6	8
Y	5	8	12	15	14

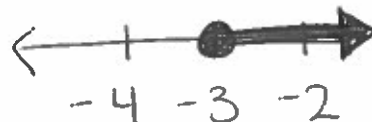
Chapter 6:

Graph the inequality.

16)  $x < 7$



17)  $x \geq -3$



Solve the inequality

18)  $y - 2 > 3$

$y > 5$

19)  $4 \geq x - 3$

$x \leq 7$

20)  $2 + n \leq 4\frac{1}{2}$

$n \leq 2\frac{1}{2}$

21)  $-8.5 \leq t - 10$

$t - 10 \geq -8.5$

$t \geq 1.5$

22)  $-6.9 > -1.4 + y$

$+1.4 \quad +1.4$

$-5.5 > y$

23)  $3x + 5 \leq 20$

$3x \leq 15$

$x \leq 5$

24)  $8(m+2) < 4(5+2m)$

$8m + 16 < 20 + 8m$   
 $-8m \quad -8m$

$16 < 20$

All Real Numbers

25)  $6d - 4 - 3d \geq 14$

$3d - 4 \geq 14$

$3d \geq 18$

$d \geq 6$

26)  $\frac{2}{3}y + 28 > 20 + 2y$

$8 > \frac{1}{3}y$

$6 > y$

27)  $\frac{5}{6}(12z - 24) > \frac{2}{5}(25z - 25)$

$10z - 20 > 10z - 10$   
 $-10z \quad -10z$

$-20 > -10$

No Solution

28)  $2 \leq y - 4 < 7$

$2 \leq y - 4$  or  $y - 4 < 7$

$8 \leq y$        $y < 11$

$8 \leq y < 11$

Solve the inequality and graph the solution.

29)  $-27 < 9x < 27$

$-27 < 9x$        $9x < 27$

$-3 < x$        $x < 3$

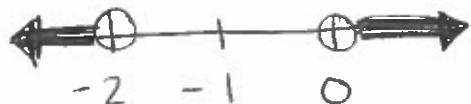


31)  $-n - 1 > 1$  or  $2n + 8 > n + 8$

$-n - 1 > 1$        $2n + 8 > n + 8$

$-n > 2$        $2n > n$

$n < -2$        $n > 0$

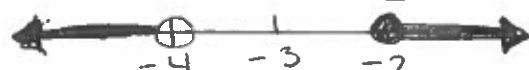


30)  $3r + 7 < -5$  or  $32 \leq 7r + 46$

$3r + 7 < -5$        $32 \leq 7r + 46$

$3r < -12$        $-14 \leq 7r$

$r < -4$        $-2 \leq r$



32)  $9t - 20 \geq 4t$  or  $4 < \frac{1}{2}t$

$9t - 20 \geq 4t$        $4 < \frac{1}{2}t$

$-20 \geq -5t$        $-8 > t$

$4 \leq t$



Solve the equation, if possible.

33)  $|x| = 8$

$x = 8$  or  $x = -8$

34)  $|m + 6| = 5$

$m + 6 = 5$  or  $m + 6 = -5$   
 $m = -1$  or  $m = -11$

36)  $4|6s + 11| = -52$

$4(\text{positive}) = -52$   
No solution

37)  $12\left|\frac{5}{6}w - 4\right| - 4 = 8$

$+4 +4$   
 $12\left|\frac{5}{6}w - 4\right| = 12$

$\frac{5}{6}w - 4 = 1$  or  $\frac{5}{6}w - 4 = -1$   
 $w = 6$  or  $w = 4\frac{4}{5}$

Solve the inequality.

39)  $|x| \leq 3$

$x \leq 3$  or  $x \geq -3$

40)  $|x + 2| > 6$

$x + 2 > 6$

$x > 4$

or  $x + 2 < -6$

$x > -8$

41)  $|3q + 2| - 3 \geq 8$

$|3q + 2| \geq 11$

$3q + 2 \geq 11$  or  $3q + 2 \leq -11$

$3q \geq 9$

$q \geq 3$

$3q \leq -13$

$q \leq -\frac{13}{3}$

42)  $2|5a - 1| + 3 \leq 11$

$2|5a - 1| \leq 14$

$|5a - 1| \leq 7$

$5a - 1 \leq 7$  or  $5a - 1 \geq -7$

$5a \leq 8$

$5a \geq -6$

$a \leq \frac{8}{5}$

$a \geq -\frac{6}{5}$

43)  $4\left|\frac{2}{3}c + 2\right| < 64$

$\frac{2}{3}c + 2 < 16$  or  $\frac{2}{3}c + 2 > 16$

$\frac{2}{3}c < 14$

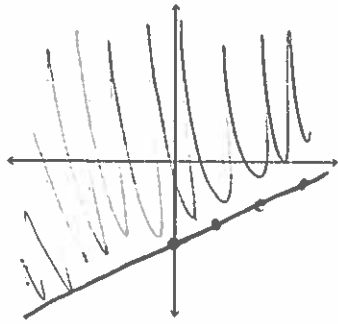
$c < 21$

$\frac{2}{3}c > -18$

$c > -27$

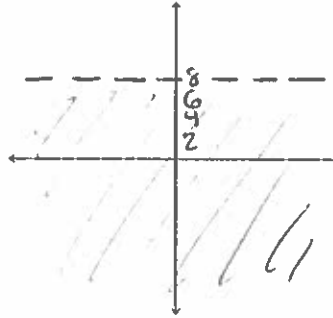
Graph the inequality.

44)  $3(x-8) \leq 6y$

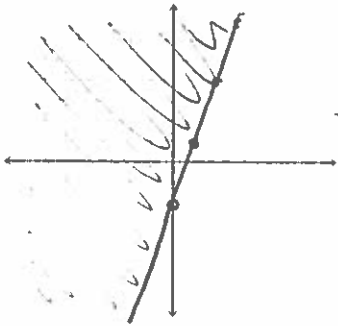


$$\begin{aligned} 3x - 24 &\leq 6y \\ \frac{1}{2}x - 4 &\leq y \\ y &\geq \frac{1}{2}x - 4 \end{aligned}$$

45)  $y < 8$

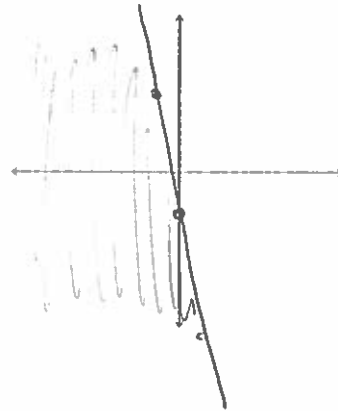


46)  $2(x-1) \geq 1-y$



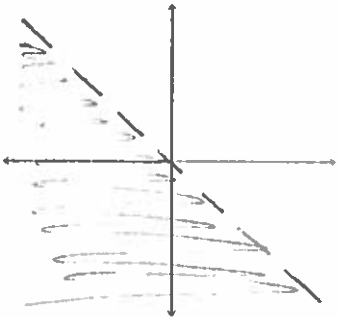
$$\begin{aligned} 2x - 2 &\geq 1 - y \\ 2x - 3 &\geq -y \\ -2x + 3 &\leq y \\ y &\geq -2x + 3 \end{aligned}$$

47)  $2(-x-1) \geq 4+y$



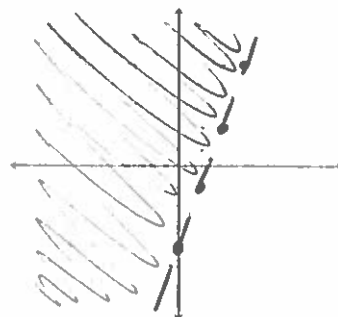
$$\begin{aligned} -2x - 2 &\geq 4 + y \\ -2x - 6 &\geq y \\ y &\leq -2x - 6 \end{aligned}$$

49)  $2x < -2y$



$$\begin{aligned} -x &> y \\ y &< -x \end{aligned}$$

50)  $4x + y > 3$



$$y > -4x + 3$$