

1. Write the equation of the line that is parallel to the graph of $y = \frac{1}{2}x + 6$, and whose y-intercept is -2.

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

2. Write the equation of the line that is parallel to the graph of $y = -4x - 9$, and whose y-intercept is 3.

$$y = -4x + 3$$

3. Write the equation of the line that is parallel to the graph of $3x - y = 5$, and whose y-intercept is (0, -7).

$$y = 3x - 7$$

$$\begin{aligned} -3x & \quad -3x \\ -y & = -3x + 5 \quad m = 3 \\ -1 & \quad -1 \\ y & = 3x - 5 \end{aligned}$$

4. Write the equation of the line that is parallel to the graph of $2x + y = 5$, and whose y-intercept is (0, 4).

$$y = -2x + 4$$

$$\begin{aligned} -2x & \quad -2x \\ -y & = -2x + 5 \\ m & = -2 \end{aligned}$$

Write the slope-intercept form of an equation of the line that passes through the given point and is parallel to the graph of each equation.

5. (3, 2), $y = x + 5$ $m = 1$

$$y - 2 = 1(x - 3)$$

$$y - 2 = x - 3$$

$$y = x - 1$$

6. (-2, 5), $y = -4x + 2$ $m = -4$

$$y - 5 = -4(x + 2)$$

$$y - 5 = -4x - 8$$

$$y = -4x - 3$$

7. (-3, 4), $y = \frac{2}{3}x - 3$

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

$$m = \frac{2}{3}$$

$$y - 4 = \frac{2}{3}(x + 3)$$

$$y - 4 = \frac{2}{3}x + 2$$

$$y = \frac{2}{3}x + 6$$

8. (-1, -4), $9x + 3y = 8$ $m = -3$

$$y = -\frac{9x + 8}{3}$$

$$y = -3x - \frac{8}{3}$$

$$y + 4 = -3(x + 1)$$

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

$$y = -3x - 7$$

9. Write the equation of the line that is perpendicular to the graph of $y = \frac{1}{2}x + 6$, and whose y-intercept is (0, -2).

$$y = -2x - 2$$

10. Write the equation of the line that is perpendicular to the graph of $y = -4x - 9$, and whose y-intercept is (0, 3).

$$y = \frac{1}{4}x + 3$$

11. Write the equation of the line that is perpendicular to the graph of $3x - y = 5$, and whose y-intercept is -7.

$$y = -\frac{1}{3}x - 7$$

$$\begin{aligned} -3x & \quad -3x \\ -y & = -3x + 5 \\ -1 & \quad -1 \\ y & = 3x - 5 \end{aligned}$$

$$m = 3$$

$$+m = -\frac{1}{3}$$

12. Write the equation of the line that is perpendicular to the graph of $2x + y = 5$, and whose y-intercept is 4.

$$\begin{aligned} 2x + y &= 5 \\ -2x & \quad -2x \\ y &= -2x + 5 \end{aligned} \quad \begin{aligned} m &= -2 \\ \perp m &= \frac{1}{2} \end{aligned}$$

$$y = \frac{1}{2}x + 4$$

Write the slope-intercept form of an equation of the line that passes through the given point and is perpendicular to the graph of each equation.

13. $(3, 2), y = x + 5 \quad m = -1$

$$\begin{aligned} y - 2 &= -1(x - 3) \\ y - 2 &= -x + 3 \\ y &= -x + 5 \end{aligned} \quad \boxed{y = -x + 5}$$

14. $(-8, 5), y = -4x + 2 \quad m = \frac{1}{4}$

$$\begin{aligned} y - 5 &= \frac{1}{4}(x + 8) \\ y - 5 &= \frac{1}{4}x + 2 \\ y &= \frac{1}{4}x + 7 \end{aligned} \quad \boxed{y = \frac{1}{4}x + 7}$$

15. $(-6, 4), 3y = 2x - 3 \quad y - 4 = -\frac{3}{2}(x + 6)$

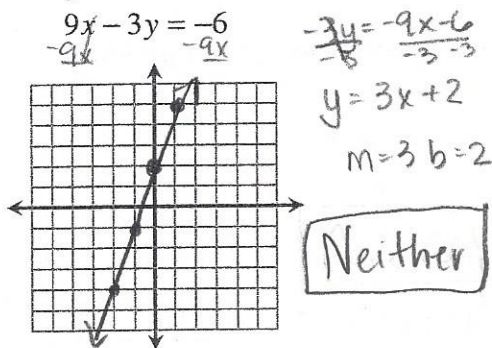
$$\begin{aligned} \frac{3y}{3} &= \frac{2x - 3}{3} \\ y &= \frac{2}{3}x - 1 \\ m &= -\frac{3}{2} \end{aligned} \quad \begin{aligned} y - 4 &= -\frac{3}{2}(x + 6) \\ y - 4 &= -\frac{3}{2}x - 9 \\ y &= -\frac{3}{2}x - 5 \end{aligned} \quad \boxed{y = -\frac{3}{2}x - 5}$$

16. $(-1, -4), 9x + 3y = 8 \quad y + 4 = \frac{1}{3}(x + 1)$

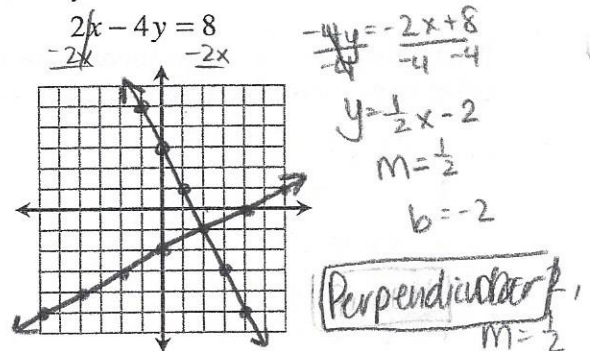
$$\begin{aligned} \frac{9x + 3y}{3} &= \frac{8}{3} \\ 3y &= -9x + 8 \\ y &= -3x + \frac{8}{3} \end{aligned} \quad \begin{aligned} y + 4 &= \frac{1}{3}(x + 1) \\ 3(y + 4) &= \frac{1}{3} \cdot 3(x + 1) \\ 3y + 12 &= x + 1 \\ 3y &= x - 11 \\ y &= \frac{1}{3}x - \frac{11}{3} \end{aligned} \quad \boxed{y = \frac{1}{3}x - \frac{11}{3}}$$

Graph the following lines and determine if they are parallel, perpendicular, coincide, or intersecting lines.

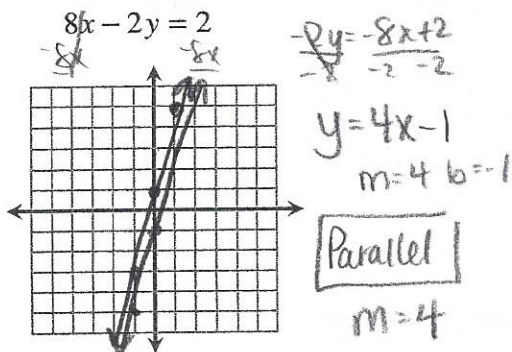
17. $y = 3x + 2 \quad m = 3 \quad b = 2$



18. $y = -2x + 3 \quad m = -2 \quad b = 3$



19. $y = 4x + 1 \quad m = 4, b = 1$



20. $y = \frac{2}{3}x - 2 \quad m = \frac{2}{3} \quad b = -2$

