

Equations for a Line

- Slope-Intercept Form $y = mx + b$
- Standard Form $Ax + By = C$
- Point-Slope Form $y - y_1 = m(x - x_1)$
- Horizontal Lines $y = \#$
- Vertical Lines $x = \#$

Determine the x and y intercepts of each linear function.

1. $3x + 4y = 12$

$$\begin{aligned} \rightarrow y &= 12 \\ y &= 3 \\ x &= 4 \end{aligned}$$

2. $8x - 3y = 24$

$$\begin{aligned} y &= -8 \\ x &= 3 \end{aligned}$$

3. $y = 6$

$$\begin{aligned} \text{NO } x \text{ int} \\ y &= 6 \end{aligned}$$

4. $x = 3$

$$\begin{aligned} \text{NO } y \text{ int} \\ x &= 3 \end{aligned}$$

5. $3x - 5y = 15$

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

6. $-7x + 2y = 14$

$$\begin{aligned} y &= 7 \\ x &= -2 \end{aligned}$$

Convert each equation from slope-intercept form to standard form.

7. $y = -4x - 11$

$$\begin{aligned} &+4x + 4x \\ 4x + y &= -11 \end{aligned}$$

8. $y = -\frac{x}{5} + 0$

$$\frac{x}{5} + y = 0$$

9. $y = -6x + 38$

$$\begin{aligned} &+6x + 6x \\ 6x + y &= 38 \end{aligned}$$

Write each equation in STANDARD FORM.

10. slope = $\frac{3}{5}$ y-intercept = 5

$$y = mx + b$$

$$y = \frac{3}{5}x + 5$$

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

11. slope = $\frac{5}{4}$ y-intercept = 2

$$y = \frac{5}{4}x + 2$$

$$-\frac{5}{4}x + y = 2$$

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

$$m = -4$$

$$y = -4x + 3$$

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.

$$(3, b) \quad y = mx + b = \frac{1}{2}$$

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

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

point slope

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

$$y = 3x - 7$$

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

$$y = 3x - 5$$

$$m = 3$$

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

$$y = -2x + 4$$

$$\begin{array}{l} -2x \quad -2x \\ y = -2x + 5 \\ m = -2 \end{array}$$

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

$$\begin{array}{l} m = 1 \\ y - 2 = 1(x - 3) \\ y - 2 = 1x - 3 \\ y = 1x - 1 \end{array}$$

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

$$\begin{array}{l} m = -4 \\ y - 5 = -4(x + 2) \\ y - 5 = -4x - 8 \\ y = -4x - 3 \\ y - 5 = \frac{1}{4}(x + 2) \\ y - 5 = \frac{1}{4}x + \frac{1}{2} \end{array}$$

7. $(-3, 4)$, $3y = 2x - 3$

$$\begin{array}{l} y = \frac{2}{3}x - 1 \\ y - 4 = \frac{2}{3}(x + 3) \\ y - 4 = \frac{2}{3}x + 2 \\ y = \frac{2}{3}x + 6 \end{array}$$

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

$$\begin{array}{l} -9x \quad -9x \\ 3y = -9x + 8 \\ y = -3x + \frac{8}{3} \\ y + 4 = -3(x + 1) \\ y + 4 = -3x - 3 \\ y = -3x - 7 \end{array}$$

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 $(0, -2)$.

$$\begin{array}{l} m = -2 \\ y + 2 = -2(x - 0) \\ y + 2 = -2x \\ y = -2x - 2 \end{array}$$

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

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

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

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

$$\begin{array}{r} -3x - 3x \\ -y = -3x + 5 \\ y = 3x - 5 \\ m = \frac{1}{3} \end{array}$$

Parallel & Perpendicular Quiz on Wednesday!

HW #42 - Practice 6.5 Worksheet (study guide for quiz)