

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

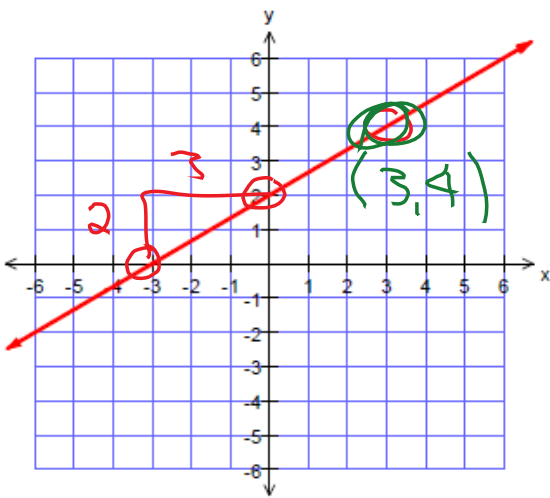
1. Write an equation in slope-point form for a line having slope -2 and passing through the point $(1, -3)$.

$$[y - (-3)] = -2(x - 1) \quad y + 3 = -2(x - 1)$$

2. Consider the linear function given by the equation $y + 4 = 2(x + 1)$. Identify the slope and one point that lies on the line.

$$m = 2 \quad (-1, -4)$$

3. Write an equation, in slope-point form, for the following graph.

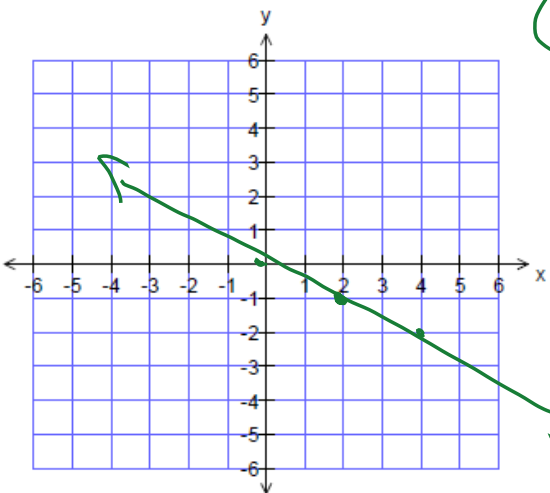


$$m = \frac{2}{3}$$

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

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

4. Graph the equation $y + 1 = -\frac{1}{2}(x - 2)$.



$$(2, -1)$$

$$m = -\frac{1}{2}$$

5. (A) Write the equation of a line that passes through the point $(2, -1)$ and is parallel to the line given by the equation $y = 3x - 4$. Write the equation in slope-point form. x_1, y_1

$$m = 3 \quad y + 1 = 3(x - 2)$$

- (B) Write your answer from (A) in slope-intercept form. (Solve for y)

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

$$y = 3x - 6 - 1$$

$$y = 3x - 7$$

6. Write the following in slope-intercept form:

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

$$y = -3x - 6 + 1$$

$$y = -3x - 5$$

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

$$y = 4x - 8 - 5 \rightarrow y = 4x - 13$$

7. Write the equation (in slope-point form) of a line that passes through $(1, -3)$ and is perpendicular to the line $y = -2x + 1$. x_1, y_1

$$m = \frac{1}{2} \quad y + 3 = \frac{1}{2}(x - 1)$$

8. Determine the x and y -intercepts of the function $2x + 4y - 16 = 0$.

$$\begin{aligned} \text{x-int: } y &= 0 \\ 2x + 4(0) - 16 &= 0 \\ 2x &= 16 \quad (8, 0) \\ \frac{2x}{2} &= \frac{16}{2} \\ x &= 8 \end{aligned}$$

$$\begin{aligned} \text{y-int: } x &= 0 \\ 2(0) + 4y - 16 &= 0 \\ 4y &= 16 \quad (0, 4) \\ \frac{4y}{4} &= \frac{16}{4} \\ y &= 4 \end{aligned}$$

9. Write the following in slope-intercept form. (solve for y)

(A) $2x + 4y - 16 = 0$

$$\begin{aligned} 4y &= -2x + 16 \\ \frac{4y}{4} &= \frac{-2x}{4} + \frac{16}{4} \\ y &= -\frac{1}{2}x + 4 \end{aligned}$$

(B) $3x + 6y + 12 = 0$

$$\begin{aligned} 6y &= -3x - 12 \\ \frac{6y}{6} &= \frac{-3x}{6} - \frac{12}{6} \\ y &= -\frac{1}{2}x - 2 \end{aligned}$$

10. Write the following in slope-intercept form and determine the slope and y -intercept of $2x + 3y - 12 = 0$.

$$\begin{aligned} \frac{3y}{3} &= \frac{-2x}{3} + \frac{12}{3} & m &= -\frac{2}{3} \\ y &= -\frac{2}{3}x + 4 & b &= 4 \end{aligned}$$

11. Re-write the following in general form.

(A) $y = -4x + 6$

$$4x + y - 6 = 0$$

(B) $y + 6 = -2(x - 1)$

$$y + 6 = -2x + 2$$

$$2x + y + 6 - 2 = 0$$

$$2x + y + 4 = 0$$

(C) $y = -\frac{3}{4}x - 2$ LCD: 4

$$4 \cdot y = 4 \cdot \left(-\frac{3}{4}\right)x - 4(2)$$

$$4y = -3x - 8$$

$$3x + 4y + 8 = 0$$

(D) $y + 2 = \frac{1}{2}(x - 1)$

$$2y + 2(2) = 2 \left[\frac{1}{2}(x - 1) \right]$$

$$2y + 4 = x - 1$$

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

$$x - 2y - 5 = 0$$

$$Ax + By + C = 0$$

• No fractions

• A must be positive

x_1, y_1 x_2, y_2

12. Determine the equation of the line passing through $(-2, 1)$ and $(4, 7)$ in general form.
[Hint: write the equation in slope-intercept form first and change to general form].

$$m = \frac{7-1}{4-(-2)}$$
$$= \frac{6}{6}$$
$$= 1$$

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

$$y-1 = x+2$$

$$0 = x - y + 2 + 1$$

$$x - y + 3 = 0$$