

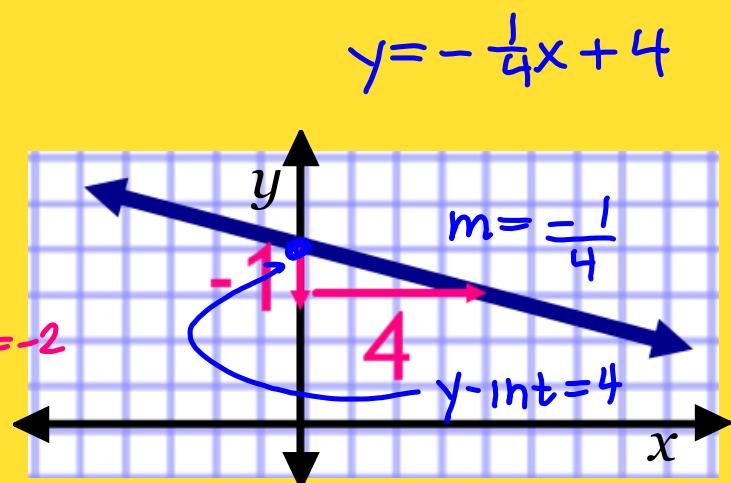
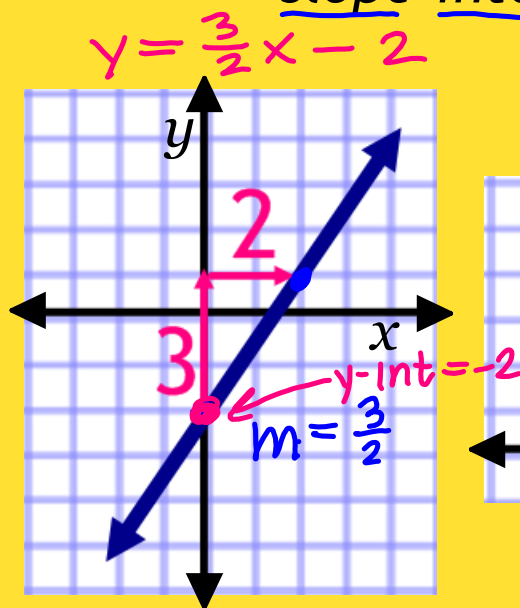
3.5 Write & Graph Equations of Lines

slope-intercept form

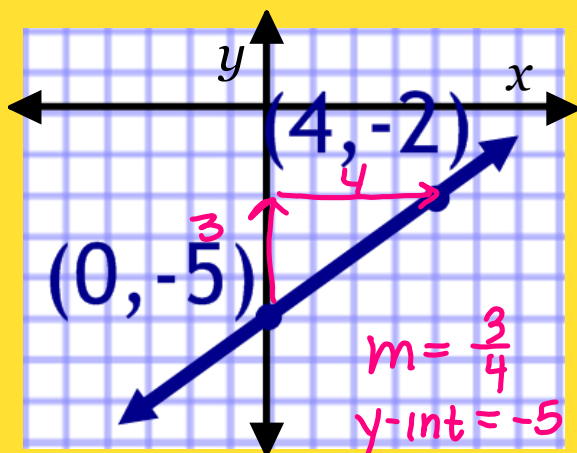
$$y = mx + b$$

↑ ↑
slope y-intercept

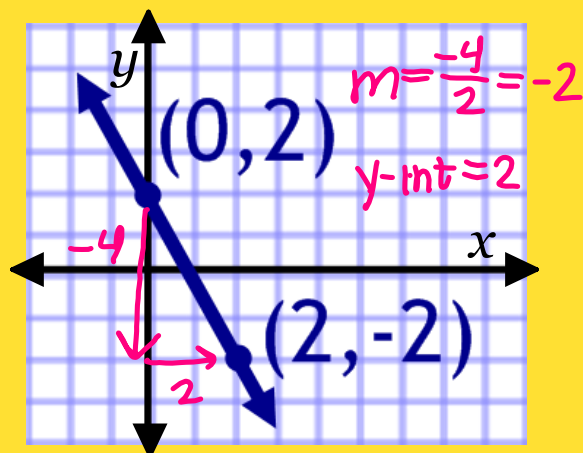
Write the equation of the line in slope-intercept form.



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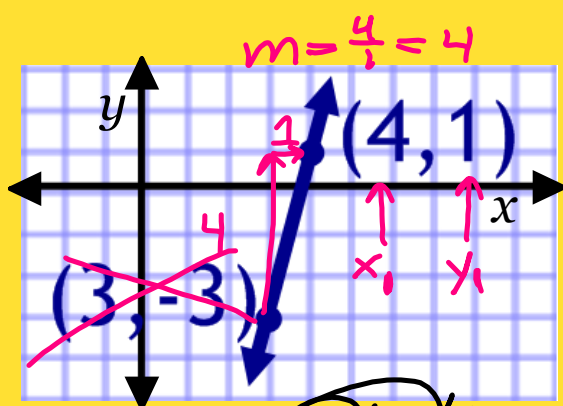


$$y = \frac{3}{4}x - 5$$



$$y = -2x + 2$$

Write the equation of the line in slope-intercept form.

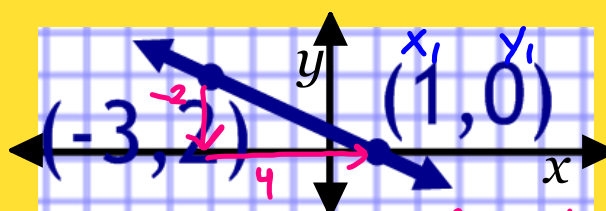


$$y - 1 = 4(x - 4)$$

$$y - 1 = 4x - 16$$

$$\begin{array}{r} y - 1 = 4x - 16 \\ +1 \qquad \qquad +1 \\ \hline y = 4x - 15 \end{array}$$

point-slope form
 $y - y_1 = m(x - x_1)$



$$y - 0 = -\frac{1}{2}(x - 1)$$

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

Write an equation of the line passing through the points ~~(-2, 5)~~ and (1, 2).

$$m = \frac{2 - 5}{1 - (-2)} = \frac{-3}{3} = -1$$

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

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

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

$$\begin{array}{r} y - 2 = -x + 1 \\ +2 \qquad \qquad +2 \\ \hline y = -x + 3 \end{array}$$

Write an equation of the line passing through the point (2, -3) that is parallel to the line with the equation $y = 6x + 4$.

$$m = 6$$

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

$$y - (-3) = 6(x - 2)$$

$$y + 3 = 6x - 12$$

$$\begin{array}{r} y + 3 = 6x - 12 \\ -3 \qquad \qquad -3 \\ \hline y = 6x - 15 \end{array}$$

Write an equation of the line passing through the point $(3, -4)$ that is **perpendicular** to the line with the equation $y = -2x - 5$.

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

$$m_{\perp} = \frac{1}{2}$$

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

$$y - -4 = \frac{1}{2}(x - 3)$$

$$y + 4 = \frac{1}{2}x - \frac{3}{2}$$

$$\begin{array}{r} -4 \\ \hline \end{array} \quad \begin{array}{r} -\frac{3}{2} \\ -\frac{4}{2} \\ \hline \end{array} = -\frac{8}{2}$$

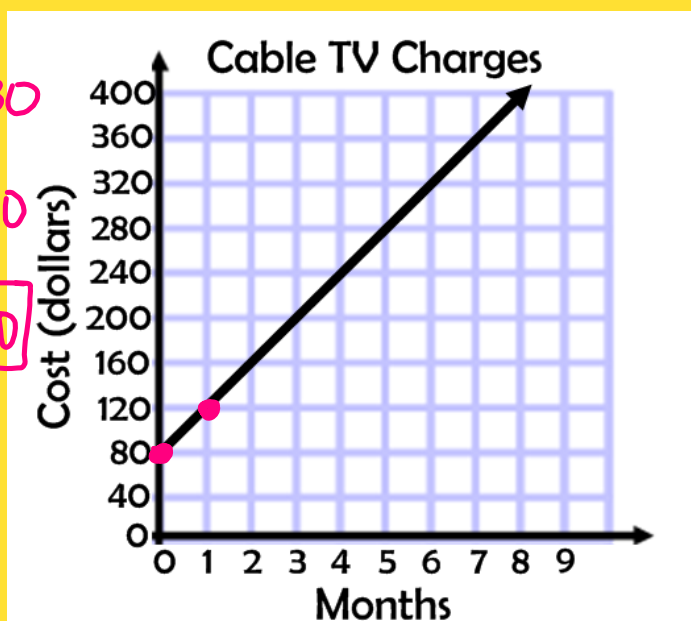
$$y = \frac{1}{2}x - \frac{11}{2}$$

The graph shows the cost of having cable television installed in your home. Write an equation of the line. Explain the meaning of the slope and the y-intercept of the line.

$$y\text{-int} = 80$$

$$m = \frac{40}{1} = 40$$

$$y = 40x + 80$$



$$m = 40$$

\$40/month

$$y\text{-int} = 80$$

\$80 starting cost