

Point slope form of a linear equation

$$y - y_1 = m(x - x_1) \quad \text{You need only 1 point}$$

Given $(1, -4)$ and $(-2, 5)$:

Ⓐ Write in point slope form

Ⓑ convert to slope intercept form.

$$\begin{matrix} (1, -4) & (-2, 5) \\ x_1 & x_2 \\ y_1 & y_2 \end{matrix}$$

② Point slope: $y - y_1 = m(x - x_1)$

① calculate slope: $m = \frac{5 - (-4)}{-2 - 1} = \frac{9}{-3} = -3$

② choose either point for x, y

③ Plug in $y + 4 = -3(x - 1)$
or
 $y - 5 = -3(x + 2)$

This is point slope form

Convert to slope intercept form

$$y+4 = -3(x-1) \quad \text{Distribute}$$

$$y+4 = -3x+3 \quad \text{Get } y \text{ by itself}$$

$$\boxed{y = -3x - 1}$$

Given points $(5, 3)$ $(7, 4)$

Ⓐ write it in point slope form

Ⓑ write in slope intercept form

Ⓒ then convert to standard form

$$\textcircled{a} \quad m = \frac{4-3}{7-5} = \frac{1}{2}$$

$$y - y_1 = m(x - x_1)$$
$$y - 3 = \frac{1}{2}(x - 5) \text{ point slope form}$$

$$y-3 = \frac{1}{2}(x-5) \quad \text{point slope form}$$

$$y-3 = \frac{1}{2}x - \frac{5}{2} \left(\frac{1}{2}\right)$$

$$\cancel{y-3} = \frac{1}{2} \left(\cancel{-\frac{5}{2}} + \frac{3}{1} \right)$$

$$y = \frac{1}{2}x - \frac{5}{2} + \frac{6}{2}$$

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

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

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

slope
intercept

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

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

$$x - 2y = -1$$

$$Ax + By = C$$

* Standard
form -
coefficients
must be
integers

$$\text{slope} = 5 \quad (0, 2)$$

convert to standard
form using slope
intercept form:

$$y = 5x + 2$$

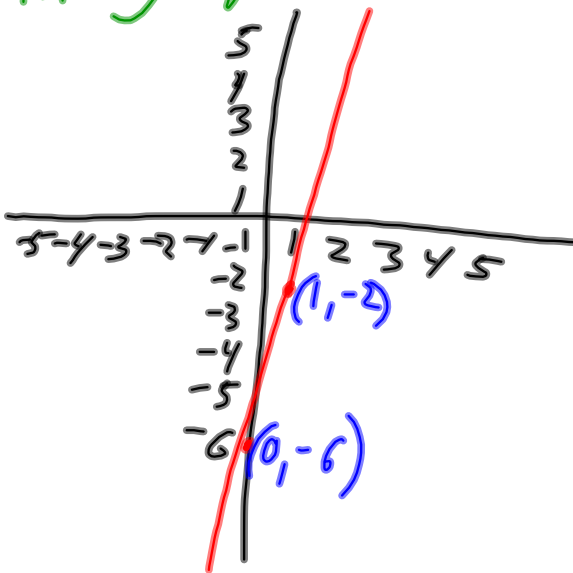
$$-1(-5x + y = 2)$$

$$5x - y = -2$$

standard form

Let's do Ex 1-5 on p. 165-168.

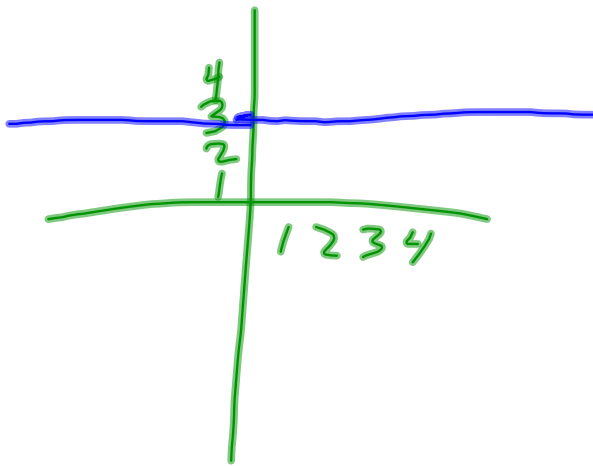
Write the equation of the line from the graph:



Lets do Ex 6 on p. 168.

* Standard Form requires you to eliminate any fractions for Ax or By .

Do this by multiplying both sides by the denominator.



Write the equation of the horizontal line.

Lets do Ex 8 and 9 on
p. 170

