form $y = mx + b$

$$5x + 2y = 13$$

$$2y = -5x + 13$$

$$y = \frac{1}{2}(-5x + 13)$$

$$y = \frac{-5}{2}x + \frac{13}{2}$$

The slope is $\frac{-5}{2}$ and the y-intercept is $(0, \frac{13}{2})$.

Parallel Lines.

Parallel lines have the same slope but different y-intercept

Example

The lines $y = -\frac{1}{2}x + 4$ and $y = -\frac{1}{2}x - 5$ are parallel lines.

Example

Find an equation of the line passing through the point $P(-1,4)$ and parallel to the line $3x + 2y = 15$.

$$3x + 2y = 15$$

$$2y = -3x + 15$$

$$y = \frac{-3}{2}x + \frac{15}{2}.$$

$\Rightarrow$ Slope is $m = -\frac{3}{2}$

$\Rightarrow$ the equation of the line is

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

$P(-1,4) \Rightarrow$

$$4 = \frac{-3}{2}(-1) + b$$

$$4 = \frac{3}{2} + b \Rightarrow b = 4 - \frac{3}{2} = \frac{5}{2}.$$

$\Rightarrow$ The equation is $y = -\frac{3}{2}x + \frac{5}{2}$.