

Writing Linear Equations in the Form $y = mx + b$

If we want to use the slope and y -intercept to graph an equation like $4x + 3y = 6$, we first have to **solve the equation for y** . That means to find an equivalent equation in the form $y = mx + b$, where m is the slope and b is the y -intercept. To do that we use the Addition and Division Principles to get the y -term by itself on one side of the equation.

$$4x + 3y = 6$$

$$3y = -4x + 6$$

$$\frac{3y}{3} = \frac{-4x + 6}{3}$$

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

Now we can see that the slope is $-\frac{4}{3}$ and the y -intercept is 2.

Solve each equation for y . Write the slope (m) and y -intercept (b) of the graph.

$$5x + 2y = 12$$

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

$$m = -\frac{5}{2} \quad b = 6$$

$$6x + 2y = 10$$

$$y = -3x + 5$$

$$m = -3 \quad b = 5$$

$$4y - 3x = 20$$

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

$$m = \frac{3}{4} \quad b = 5$$

$$x + y = 8$$

$$y = -x + 8$$

$$m = -1 \quad b = 8$$

$$x - 2y = 6$$

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

$$m = \frac{1}{2} \quad b = -3$$

$$x + 3y = 15$$

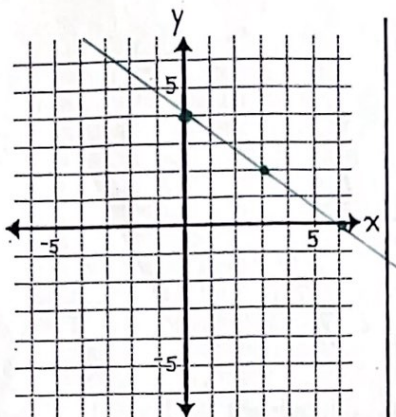
$$y = -\frac{x}{3} + 5$$

$$m = -\frac{1}{3} \quad b = 5$$

Solve each equation for y . Write the slope and y -intercept. Then use these to graph the equation.

$$2x + 3y = 12$$

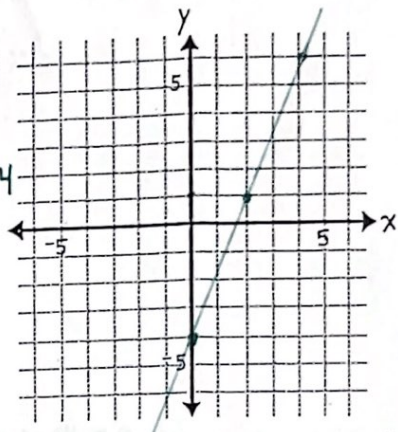
$$y = -\frac{2}{3}x + 4$$



$$m = -\frac{2}{3} \quad b = 4$$

$$5x - 2y = 8$$

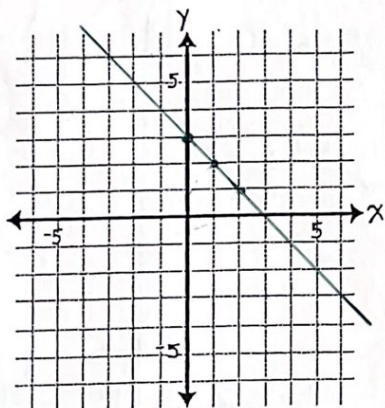
$$y = \frac{5}{2}x - 4$$



$$m = \frac{5}{2} \quad b = -4$$

$$x + y = 3$$

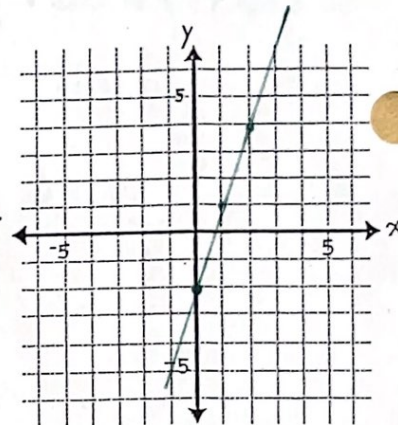
$$y = -x + 3$$



$$m = -1 \quad b = 3$$

$$3x - y = 2$$

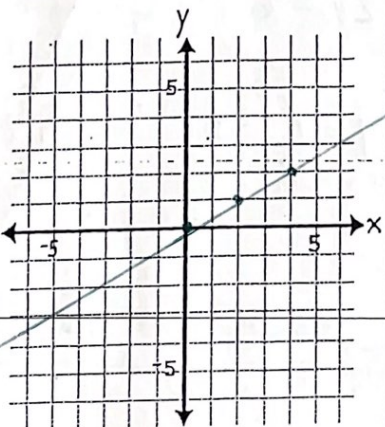
$$y = 3x - 2$$



$$m = 3 \quad b = -2$$

$$5x - 10y = 0$$

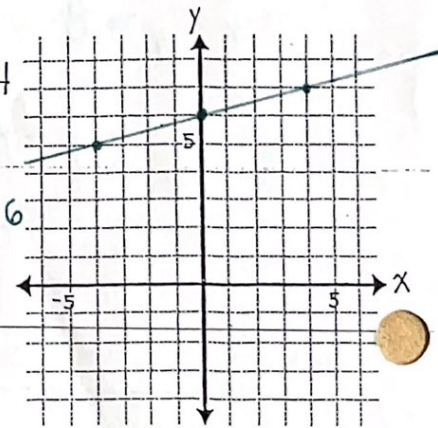
$$y = \frac{1}{2}x$$



$$m = \frac{1}{2} \quad b = 0$$

$$x - 4y = -24$$

$$y = \frac{x}{4} + 6$$



$$m = \frac{1}{4} \quad b = 6$$