

M10 - 7.1 - Standard/General Form Notes

Graph the Line in Standard Form:

x and y intercept method

$$3x + 2y = 6$$

OR

x	y
0	
	0

Y Intercept:

$$\begin{aligned}
 3x + 2y &= 6 && \text{Equation} \\
 3(0) + 2y &= 6 && \text{Put Zero in for } x \\
 2y &= 6 && \text{Solve} \\
 \frac{2y}{2} &= \frac{6}{2} \\
 y &= 3 && (x, y) \\
 &&& (0, 3)
 \end{aligned}$$

X Intercept:

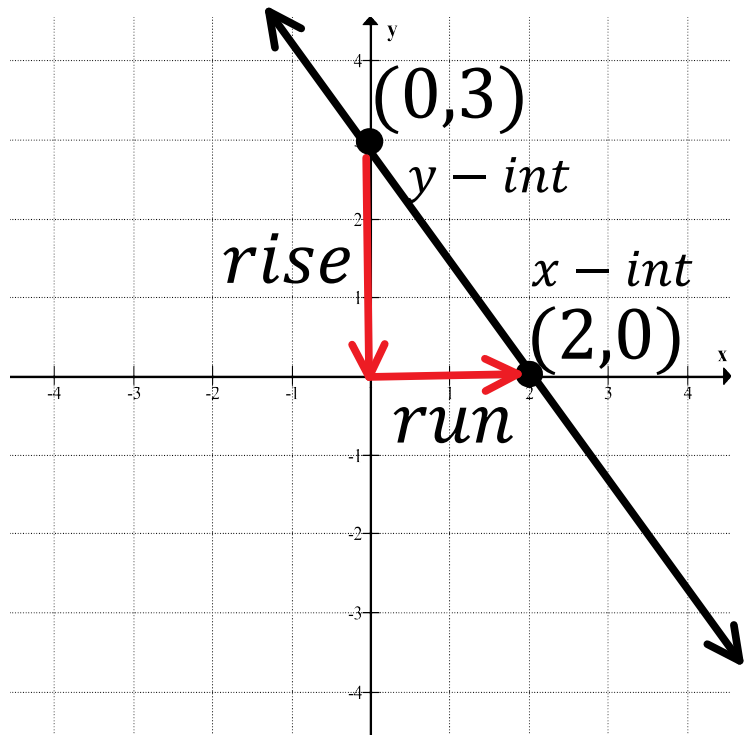
$$\begin{aligned}
 3x + 2y &= 6 && \text{Equation} \\
 3x + 2(0) &= 6 && \text{Put Zero in for } y \\
 3x &= 6 && \text{Solve} \\
 \frac{3x}{3} &= \frac{6}{3} \\
 x &= 2 && (x, y) \\
 &&& (2, 0)
 \end{aligned}$$

$$3x + 2y - 6 = 0$$

Subtract 6 on Both Sides

$$Ax + By = C$$

$$Ax + By - C = 0$$



Converting Forms

Standard to Slope Intercept

$Ax + By + C = 0 \longrightarrow y = mx + b$

$$\begin{aligned}
 3x + 2y &= 6 && \text{Equation} \\
 -3x &\quad -3x && \text{Subtract } 3x \text{ to Both Sides} \\
 2y &= -3x + 6 \\
 \frac{2y}{2} &= \frac{-3x}{2} + \frac{6}{2} && \text{Divide Both Sides by } 2
 \end{aligned}$$

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

Slope Intercept Equation

$y = mx + b \leftarrow y - \text{intercept: } (0, b)$
 \uparrow
 $\text{Slope} = \frac{\text{rise}}{\text{run}}$

Slope Intercept to Standard

$y = mx + b \longrightarrow Ax + By + C = 0$

$$\begin{aligned}
 y &= -\frac{3}{2}x + 3 && \text{Equation} \\
 \left(y = -\frac{3}{2}x + 3 \right) \times 2 &&& \text{Multiply Both Sides by } 2 \text{ (LCD*)} \\
 2y &= -3x + 6 \\
 +3x &\quad +3x && \text{Add } 3x \text{ to Both Sides}
 \end{aligned}$$

$3x + 2y = 6$

Standard Form Equation

Subtract 6 from Both Sides

$$-6 \quad -6$$

$3x + 2y - 6 = 0$

Standard Form Equation

$Ax + By = C$
 $Ax + By - C = 0$
 +x coefficient
 x, y, #/ = 0 Order
 No Fractions