Linear Forms

Solving for Y-Intercept

① Slope-Intercept $y = mx + b$ (m: slope, b: y-int)

We need slope & y-intercept.

Ex) given a slope of $-\frac{1}{4}$ & y-int of 3 write an equation. $y = -\frac{1}{4}x + 3$

② Point-Slope Form $y - y_1 = m(x - x_1)$

we need slope & a point. (m: slope; (x_1, y_1): coordinate point)

Ex) Write the equation in point-slope form & solve for y. given $m = -\frac{1}{3}$ & $(-1, -6)$. (x_1, y_1)

$y + 6 = -\frac{1}{3}(x + 1)$

$-\frac{1}{3}x - \frac{1}{3}$

-6

$y = -\frac{1}{3}x - \frac{19}{3}$

Ex) Given $m = 3$ & $(-2, 5)$

$y - 5 = 3(x + 2)$

$3x + 6 + 5$

$y = 3x + 11$

What is the only thing you can find from two pts?

Ex) Given $(2, -3)$ $(4, -2)$ (x_1, y_1) (x_2, y_2)

$\frac{-2+3}{4-2} = m = \frac{1}{2}$ → Now use slope & a pt

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

$\frac{1}{2}x - 1 - 3$

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

(3) Standard Form $Ax + By = C$

In order to solve for slope-intercept form you must isolate the "y".

$$Ax + B\boxed{y} = C \quad \text{(last)}$$
$$-Ax \qquad\qquad -Ax$$
$$\frac{By}{B} = \frac{-Ax}{B} + \frac{C}{B}$$

> simplify in slope-int form in the correct order

Ex) $5x - 2\boxed{y} = 10$ (last)

$-5x \qquad -5x$

$$\frac{-2y}{-2} = \frac{+5x}{+2} + \frac{+10}{-2}$$
$$y = \frac{5}{2}x - 5$$

Ex) $-3x + 5\boxed{y} = 30$ (last)

$+3x \qquad +3x$

$$\frac{5y}{5} = \frac{3x}{5} + \frac{30}{5}$$
$$y = \frac{3}{5}x + 6$$