Writing Equations

10/19

Slope - Intercept: $y = mx + b$

Standard Form: $Ax + By = C$

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

↳ used to write equations in either Slope-intercept or Standard form

↳ You will be given 1 point & slope OR 2-points.

Oct 9-2:08 PM

Examples: Write in Slope-intercept form

$y = mx + b$

1. $(2, 1)$ $m = 3$

   x y

   $y = m x + b$

   $1 = 3(2) + b$

   $1 = 6 + b$

   $\underline{-6 \quad -6}$

   $b = -5$

   $\boxed{y = 3x - 5}$

Option 1: Find b to write equation

2. $(-2, 5)$ $m = \frac{1}{2}$

   x y

   $5 = \frac{1}{2}(-2) + b$

   $5 = -1 + b$

   $\underline{+1 \quad +1}$

   $\boxed{b = 6}$

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

Oct 9-2:08 PM

1

Examples: Use point-slope form to write the equations in Slope-intercept form

1. $(2,1)$ $m=3$

2. $(-2,5)$ $m=\frac{1}{2}$

$$y-y_1=m(x-x_1)$$

$$y-1=3(x-2)$$

$$y-1=3x-6$$
$$+1 +1$$

$$\boxed{y=3x-5}$$

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

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

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

Oct 9-2:08 PM

If you are given 2-points - you need to find slope FIRST

3. $(3,1)(2,4)$

$$\frac{y_2-y_1}{x_2-x_1}=\frac{4-1}{2-3}=\frac{3}{-1}$$

$$\boxed{m=-3}$$

$$y=mx+b$$
$$4=-3(2)+b$$
$$4=-6+b$$
$$+6 +6$$
$$\boxed{b=10}$$

$$\boxed{y=-3x+10}$$

4. $(4,2)(-2,4)$

$$\frac{4-2}{-2-4}=\frac{2}{-6}=\boxed{-\frac{1}{3}}$$

$$y-2=-\frac{1}{3}(x-4)$$

$$y-2=-\frac{1}{3}x+\frac{4}{3}$$
$$+2 \phantom{=-\frac{1}{3}x}+2$$

$$\boxed{y=-\frac{1}{3}x+\frac{10}{3}}$$

Oct 9-2:08 PM