M10 - 7.0 - Find Equation Slope Int/Slope Pt Form Algebra Notes

Given a point and the slope: $(1,3)$ $m=2$
(x,y)

$y-y_1=m(x-x_1) \longrightarrow y=mx+b$

Slope Intercept Form:

$y=mx+b$ Slope Intercept Form
$y=(2)x+b$ Substitute m
$(3)=(2)(1)+b$ Substitute x and y
$3=2+b$
$-2 \quad -2$
$1=b$ Solve for b

$y=mx+b$
$y=(2)x+(1)$ Slope Intercept Form, Substitute m and b

$y=2x+1$ ← They are equal → $y=2x+1$

Slope Point Form:

$y-y_1=m(x-x_1)$ Slope Point Form
$y-y_1=2(x-x_1)$ Substitute m
$y-(3)=2(x-(1))$ Substitute x and y

$y-3=2(x-1)$ **Slope Point Form to Slope Intercept Form**

$y-3=2(x-1)$
$y-3=2x-2$ Distribute
$+3 \quad +3$ Add 3 to Both Sides
$y=2x+1$ Slope Intercept Form

Given two points: $(0,1)$ and $(1,3)$
$(x_1,y_1) \quad (x_2,y_2)$

Slope

$m=\frac{y_2-y_1}{x_2-x_1}$ Slope Equation

$m=\frac{(3)-(1)}{(1)-(0)}$ Substitute With Brackets

It doesn't matter which point you use

$m=\frac{2}{1}$ Find m

$m=2$

Repeat Beginning of page!

Standard to Slope Intercept Form $Ax+By+C=0 \longrightarrow y=mx+b$

$3x+2y=6$
$-3x \quad -3x$ Equation, Subtract $3x$ from Both Sides
$2y=-3x+6$
$\frac{2y}{2}=-\frac{3x}{2}+\frac{6}{2}$ Divide Both Sides by 2

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

$Slope=-\frac{3}{2}$ $y-int$: $(0,3)$

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

Slope Intercept to Standard Form $y=mx+b \longrightarrow Ax+By+C=0$

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

$3x+2y=6$ Standard from Equation

$-6 \quad -6$ Subtract 6 from Both Sides

$3x+2y-6=0$ Standard Form Equation

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

We don't go to slope point!