

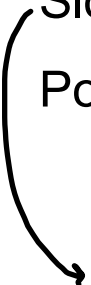
Algebra 1: 4.2 Point Slope Form

So far we've been using the slope and y-intercept to write equations of lines, but oftentimes you aren't given that information. We'll compare whether it's easier to use point-slope form or slope-intercept form as we progress through the lesson.

The name of each form tells you what is needed to write the equations.

Slope-intercept Form: *Slope*, *y-intercept*

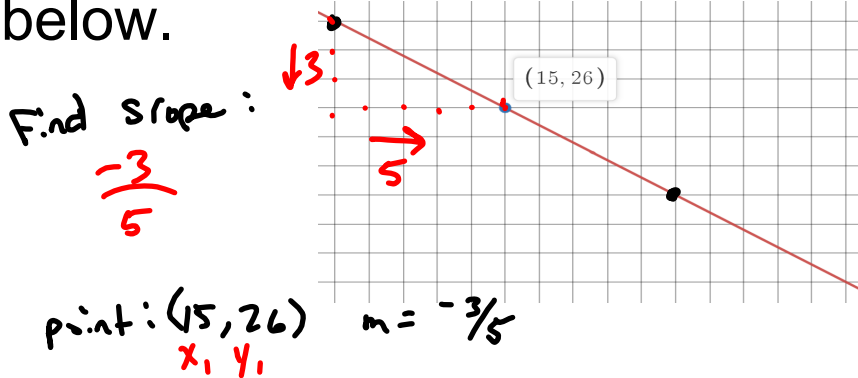
Point-Slope Form: *A Point the line passes through, slope.*


$$y = mx + b$$

↑ slope
← y-int.

4.2 Point Slope Form

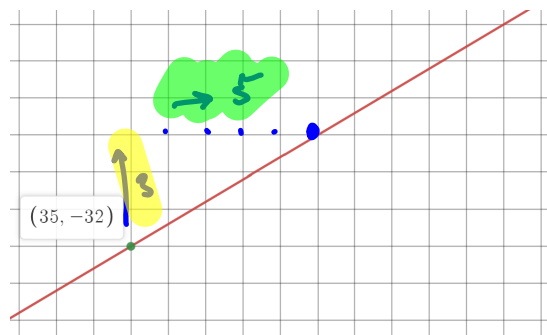
Ex: Write the equation of the line for the graph below.



We can't see
y-intercept.
So slope-intercept
is going to be
difficult.

Equation: $y - 26 = -\frac{3}{5}(x - 15)$
 y_1 m x_1

Ex: Write an equation for the graphed line below.



$m = \frac{3}{5}$

point: $(35, -32)$ $m = \frac{3}{5}$

$$y + 32 = \frac{3}{5}(x - 35)$$

$$y + 32 = \frac{3}{5}(x - 35)$$

4.2 Point Slope Form

Ex: Write an equation for the line passing through $(4, 34)$ & $(6, 46)$

Notice: we don't know Slope! Find it using Slope Formula

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{46 - 34}{6 - 4} = \frac{12}{2} = 6$$

Choose Either point! $y - 34 = 6(x - 4)$

Ex: Write an equation for the function given $f(-9) = 10$ and $f(-1) = -2$

$$(-9, 10)$$

x_1, y_1

$$(-1, -2)$$

x_2, y_2

Find Slope: $\frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 10}{-1 - (-9)} = \frac{-12}{8} = -\frac{3}{2}$

$$y - 10 = -\frac{3}{2}(x - (-9)) \quad \text{or} \quad y + 2 = -\frac{3}{2}(x + 1)$$

$$y - 10 = -\frac{3}{2}(x + 9)$$

4.2 Point Slope Form

Homework:

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