1.3 Pre-Calculus

Slope

 $\frac{rise}{run}$

 Change in the y-coordinates divided by the change in the x-coordinates

 $\frac{change in y's}{change in x^{'}s}$

 Quick way to find the slope between two points:

 $\left(-2, 3\right) \& \left(5, -7\right) 3\rightarrow -7 is-10 because you are going down 10$

 $-2\rightarrow 5 is 7 because you are going right 7$

 The slope is $-\frac{10}{7}$ .

 $\left(10, -2\right) \& (-3, 4)$ $-2\rightarrow 4 is 6 because you are going up 6$ $ $

 $10\rightarrow -3 is-13 because you are going left 13$

 The slope is $\frac{6}{13}$.

 $\left(-2, 4\right) \& \left(-2,-1\right) $ $4\rightarrow -1 is-5 becuase you are going down 5$

$ -2\rightarrow -2$ $is 0 because you are not changing the x's$

 The slope is $\frac{5}{0}$ which is undefined.

 $\left(3, -2\right)\& (-1,-2)$ $-2\rightarrow -2 is 0 because there is no change$

 $3\rightarrow -1 is-4 because you are going down 4$

 The slope is $\frac{0}{4} which is 0.$

 When the $0$ is on the top of the fraction, the slope is 0.

 When the $0$ is on the bottom of the fraction, the slope is undefined.

Slope Intercept Form

 $y=mx+b$ m is the slope, b is the y-intercept

Put these in slope intercept form.

 $m=4, b=1$ $y=4x+1$

 $m=-\frac{2}{3}, (0, -7)$ $y=-\frac{2}{3}x-7$

 $m=-2, (0, 0)$ $y=-2x$

Point Slope Form

 $y-y\_{1}=m(x-x\_{1})$

 The point is $(x\_{1},y\_{1})$ and m is the slope.

Put these in Point Slope form.

 $m=13, (3, -9)$ $y+9=13(x-3)$

 $m=-2, (0, -1)$ $y+1=-2(x-0)$

 $m=\frac{1}{5}, \left(\frac{2}{3},\frac{5}{7}\right)$ $y-\frac{5}{7}=\frac{1}{5}(x-\frac{2}{3})$

Special Cases

 HOY Horizontal lines have O slope and have an equation of $y=$ a number

 VUX Vertical lines have Undefined slope and have an equation of $x=a number$

Parallel lines have the same slope.

Perpendicular lines have negative slopes.