A Review

Slope
The slope of a line is the measure of its steepness. It is the change in $y$ divided by the change in $x$. Given two points $(x_1, y_1)$ and $(x_2, y_2)$ the slope is given by,

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

Secant Line
A line passing through two points on a curve.

Tangent Line
A line that touches a single point on a curve.

The Derivative
Now we want to turn a secant line into a tangent line. We will do this by moving the two points of the secant line very close together until they are essentially the same point.

**Derivative:** The derivative of a function $f(x)$ at the point $x = x_1$, is the slope of the tangent line that touches the function at $x = x_1$. This is also known as the *instantaneous rate of change* or *instantaneous velocity* at $x = x_1$. 

$$\lim_{x_2 \to x_1} \frac{y_2 - y_1}{x_2 - x_1}$$