Average Rate of Change & Secant Line

Average Rate of Change$=\frac{f(x_2)-f(x_1)}{x_2-x_1}=\frac{f(x_1)-f(x_2)}{x_1-x_2}$

Average Rate of Change is a single number indicating a rough amount computed for some measurablte entity that changes or varies with time.

A **Secant Line**, also simply called a secant, is a line passing through two points of a curve.

Therefore **slope of a secant line** is the same as the Average Rate of Change.

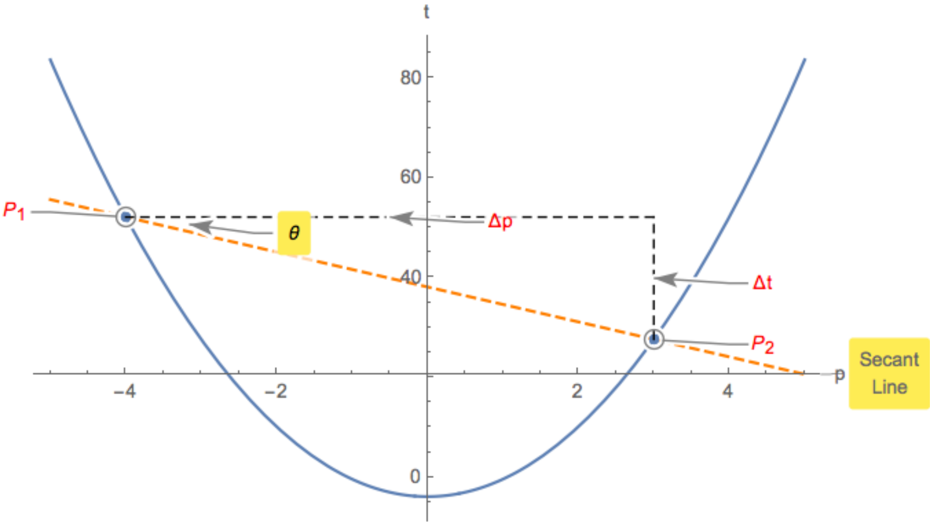
Equation for Secant Line, if **A** indicates Average Rate of Change while **f**(x) indicates horizontal axis value for secant line computes as follows:

$A=\frac{f(x)-f(x_1)}{x-x_1}\Longrightarrow A(x-x_1)=f(x)-f(x_1)\Longrightarrow A(x-x_1)+f(x_1)=f(x)$

$f(x)=Ax+(f(x_1)-Ax_1)$

Example 1.

$t=\frac{7p^2}{2}-\frac{39}{10}$ average between -4, 3



$\Delta t=t(3)-t(-4)=\frac{7(3)^2}{2}-\frac{39}{10}-\left(\frac{7(-4)^2}{2}-\frac{39}{10}\right)=-\frac{49}{2}$

Secant Slope$=\mathrm{Tan}(\Theta)=\frac{t(3)-t(-4)}{3-(-4)}=-\frac{7}{2}$

Average Rate of Change$=A=-\frac{7}{2}$

Secant Line: $t=-\frac{7}{2}p+\frac{381}{10}$

t could be temperature of a cup of tea and p time.

t could be speed of a car and p time.

t could be gasoline amount and p distance traveled.