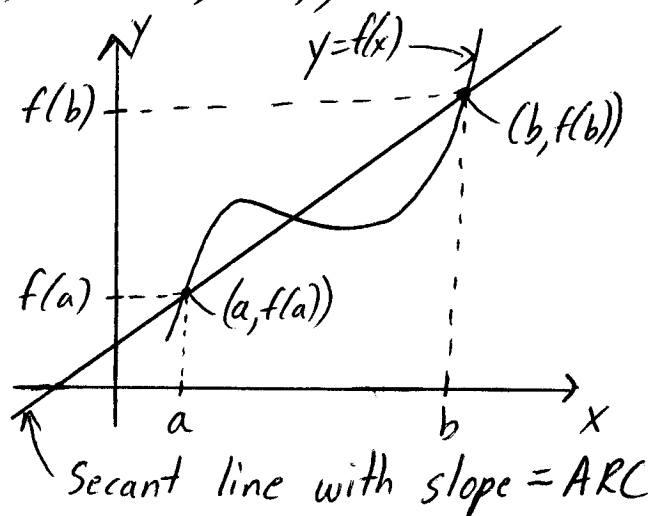


Average Rate of Change & Difference Quotient

Defn Let $y=f(x)$ be a function. A secant line of the graph $y=f(x)$ is a line connecting two points on that graph (i.e. $(a, f(a))$ & $(b, f(b))$).

Defn The Average Rate of Change (ARC) of function $y=f(x)$ on interval $[a, b]$ is

$$ARC = \frac{f(b) - f(a)}{b - a}$$



Defn The Difference Quotient (DQ) of a function $f(x)$ is

$$D.Q. = \frac{f(x+h) - f(x)}{h}$$

Notes: 1) The difference quotient is the slope of the secant line (ARC) with $a=x$ & $b=x+h$.
 2) Difference quotients are the starting point in defining the derivative in Calculus 1.