The average rate of change: $\frac{\Delta y}{\Delta x} = \frac{f(x+h) - f(x)}{h}$, $h \neq 0$

Sandwich Theorem $g(x) \leq f(x) \leq h(x) \Rightarrow \lim_{x \to c} g(x) = \lim_{x \to c} h(x) = L$ *then* $\lim_{x \to c} f(x) = L$

Let $f(x)$ be defined on an open interval about x_0, except possibly at x_0 itself. We say that **the limit of** $f(x)$ **as *x* approaches** x_0 **is the number *L***, and write: $\lim_{x \to x_0} f(x) = L$

If, for every number $\varepsilon > 0$, there exists a corresponding number $\delta > 0$ such that for all *x*,

$0 < |x - x_0| < \delta \quad \Rightarrow \quad |f(x) - L| < \varepsilon$

Continuity: $\lim_{x \to c} f(x) = f(c)$

Horizontal Asymptote: $f(x) = \frac{p(x)}{q(x)} = \frac{a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0}{b_m x^m + b_{m-1} x^{m-1} + \ldots + b_1 x + b_0} = \frac{a_n x^n}{b_m x^m}$

$n < m \Rightarrow y = 0$

$n = m \Rightarrow y = \frac{a_n}{b_m}$

$n > m \Rightarrow$ No horizontal asymptote

Vertical Asymptote - ***Think Domain***