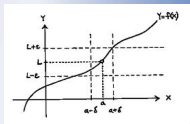
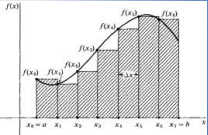


5 Limits of Trig Fns



$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

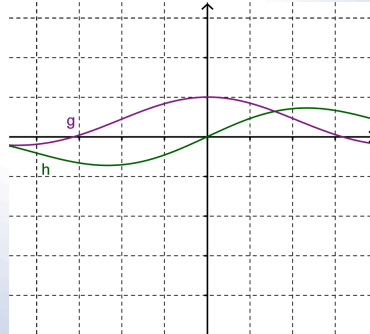
$$\frac{d}{dx} \int_a^x f(t) dt = f(x)$$



$$\lim_{\max \Delta x_i \rightarrow 0} \sum_{i=1}^n f(x_i) \Delta x_i = \int_a^b f(x) dx$$

$$\int_a^b f(x) dx = F(b) - F(a)$$

Limits Involving Trigonometric Functions



$$g(t) = \frac{\sin t}{t}$$

$$h(t) = \frac{1 - \cos t}{t}$$

Theorem

For every c in the in the trigonometric function's domain,

$$\lim_{x \rightarrow c} \sin x = \sin c$$

$$\lim_{x \rightarrow c} \csc x = \csc c$$

$$\lim_{x \rightarrow c} \cos x = \cos c$$

$$\lim_{x \rightarrow c} \sec x = \sec c$$

$$\lim_{x \rightarrow c} \tan x = \tan c$$

$$\lim_{x \rightarrow c} \cot x = \cot c$$

Special Trigonometric Limit Theorems

$$\lim_{t \rightarrow 0} \frac{\sin t}{t} = 1$$

$$\lim_{t \rightarrow 0} \frac{1 - \cos t}{t} = 0$$

5 Limits of Trig Fns

$$\text{EX 1} \quad \lim_{x \rightarrow 0} \frac{3x \tan x}{\sin x}$$

$$\text{EX 2} \quad \lim_{x \rightarrow 0} \frac{\sin^2 x}{x}$$

$$\text{EX 3} \quad \lim_{\theta \rightarrow 0} \frac{\tan(5\theta)}{\sin(2\theta)}$$

5 Limits of Trig Fns

