

# Test Review - Limits / Definition of Derivative / Derivatives

$$\lim_{x \rightarrow 4} K$$

$$\lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5}$$

$$\lim_{x \rightarrow \infty} \frac{4x^2 - 10x + 3}{3x^2 + 7}$$

$$\lim_{x \rightarrow 4} 2x - 3$$

$$\lim_{x \rightarrow \infty} \frac{2x - 4}{\sqrt{3 + 4x^2}}$$

$$\lim_{x \rightarrow 4^+} \frac{x}{x - 4}$$

Using Definition of Derivative  $\left( \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \right)$ ,  
find the general equation for the slope of the tangent  
line to the curve  $y = 4x^2$

Given the following functions, find the derivative using  
techniques of differentiation.

$$f(x) = 5x^3 + 7x$$

$$y = \sqrt{x}$$

$$f(x) = \frac{1}{x^2}$$

$$f(x) = \sin x$$

$$y = -\cos x$$

$$f(x) = (4x)(\tan x)$$

$$f(x) = \frac{\cos x}{\sqrt{x}}$$

$$f(x) = \sqrt{7x^3}$$

$$y = \cos^4(3x^5)$$

$$f(x) = \frac{(x^2 + 6x)(\tan x)}{\sqrt{x}}$$

Write the equation of the line tangent to the  
function  $f(x) = 3x^2 - 6x + 4$  at  $x = 7$