

SI Session: June 25<sup>th</sup>  
Mondays – Thursdays  
12:30 PM – 2:00 PM  
Room 1229

Prof. Stockton : Calculus I  
Summer I 2008  
SI Leader : Neil Jody

[1] For the following find the derivative and critical values of  $f$ .

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

(b)  $f(x) = \frac{3x}{\sqrt{4x^2 + 1}}$

$$(c) f(x) = \sqrt{x^2 - 3x - 10}$$

$$(d) f(x) = \frac{x^2 - 9}{(x + 1)^2}$$

(e)  $f(x) = \sin^2(x) + \cos(x)$

(f)  $f(x) = \sin^2(x)$

(g)  $f(x) = x - x^{2/3}$

[2] If  $x = \tan y$ , calculate  $\frac{d^2y}{dx^2}$ .

[3] Find the absolute maximum and minimum values of  $f(x) = x - 3x^{2/3} + 4$  on the interval  $[-8, \frac{125}{8}]$ .

[4] Find the absolute extrema of the function  $f(x) = \frac{1}{2} \cos 2x + \sqrt{3} \sin x$  on the interval  $[0, \pi]$ .

[5] Find the open intervals on which  $g(x) = \frac{x^4 + 1}{x^2}$  is increasing or decreasing, and find the relative extrema.

[3] Find the following 2<sup>nd</sup> derivative.  $\frac{d^2y}{dx^2} [x \cos(5x) - \sin^2(x)]$