

SI Session: June 11th, 2008
Mondays – Thursdays
12:30 PM – 2:00 PM
Room 1229

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

[1] Evaluate each limit.

$$(a) \lim_{x \rightarrow 0} \frac{\frac{1}{x+2} - \frac{1}{2}}{x}$$

$$(b) \lim_{x \rightarrow 3} \frac{\sqrt{3x-5} - 2}{x-3}$$

[2] Find the following limits(if they exist).

$$(a) \lim_{x \rightarrow 3} \frac{\sin(x-3)}{x^2-9}$$

$$(b) \lim_{x \rightarrow 0} x \sin\left(\frac{1}{x}\right)$$

$$(c) \lim_{x \rightarrow 0} \frac{-2 \cos x}{\sin 5x}$$

$$(d) \lim_{x \rightarrow 0} \frac{\sin 5x}{x \cos 3x}$$

$$(e) \lim_{x \rightarrow \pi/2} \frac{\sin x}{x}$$

$$(f) \lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 3x}$$

$$(g) \lim_{x \rightarrow 0} \frac{\sin(x)}{1 - \cos(x)}$$

[3] Find the limit(if it exists). If it does not exist, explain why.

$$(a) \lim_{x \rightarrow 2^+} \frac{2-x}{x^2-4}$$

$$(b) \lim_{x \rightarrow 2^+} \frac{|x-2|}{x-2}$$

$$(c) \lim_{\Delta x \rightarrow 0^+} \frac{(x+\Delta x)^2 + x + \Delta x - (x^2 + x)}{\Delta x}$$

$$(d) \lim_{x \rightarrow 1^+} f(x), \text{ where } f(x) = \begin{cases} x, & x \leq 1 \\ 1-x, & x > 1 \end{cases}$$

$$(e) \lim_{x \rightarrow \frac{\pi}{2}} \sec x$$

[4] Find the x -values (if any) at which f is not continuous. Which of the discontinuities are removable?

$$(a) f(x) = \frac{x-3}{x^2-9}$$

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

$$(c) f(x) = \begin{cases} -2x + 3, & x < 1 \\ x^2, & x \geq 1 \end{cases}$$

$$(d) f(x) = \begin{cases} -2x, & x \leq 2 \\ x^2 - 4x + 1, & x > 2 \end{cases}$$