SI Session: February, 3rd & 5th, 2009
Tuesdays: 3:30 PM – 5:00 PM
Thursdays: 1:30 PM – 3:00 PM
& 3:30 PM – 5:00 PM
Room 1245 SNAD

Prof. Stockton : Calculus I
Spring 2009
SI Leader : Neil Jody

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

(a) $f\left(x\right)=\dfrac{x-3}{x^2-9}$

(b) $f\left(x\right)=\dfrac{x-1}{x^2+x-2}$

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

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

(e) $f(x) = \dfrac{|x^2-4|x}{x+2}$

(f) $f(x)=\dfrac{3+4x-4x^2}{2x^2+7x+3}$

[2] Find the limit.

(a) $\lim_{x \to -\frac{1}{2}^{+}} \frac{6x^2 + x - 1}{4x^2 - 4x - 3}$

(b) $\lim_{x \to 0^{-}} \left(x^2 - \frac{1}{x} \right)$

(c) $\lim_{s \to 0} \frac{\left(\frac{1}{\sqrt{1+s}} \right) - 1}{s}$

(d) $\lim_{x \to \frac{\pi}{2}^+} \frac{-2}{\cos x}$

(e) $\lim_{x \to 0} \frac{x+2}{\cot x}$

(f) $\lim_{x \to \frac{1}{2}} x^2 \tan \pi x$

(g) $\lim_{x \to 0^-} \frac{\cos^2 x}{x}$

[3] Find the vertical asymptotes (if any) of the graph of the function..

(a) $h(x)=\dfrac{x^2-4}{x^3+2x^2+x+2}$

(b) $h(t)=\dfrac{t^2-2t}{t^4-16}$

(c) $g(\theta)=\dfrac{\tan\theta}{\theta}$

[4] Find the value of c that will make the function $f(x) = \begin{cases} cx + 2 & \text{if } x < 2 \\ x - 1 & \text{if } x \geq 2 \end{cases}$ continuous at every real number.

[5] Find the limit.

(a) $\lim_{x \to -3} \frac{x^2 + 5x + 6}{2x^2 + 5x - 3}$

(b) $\lim_{x \to 1^-} \frac{3x - 3}{|x - 1|}$

(c) $\lim_{x \to 4} \frac{x-4}{2-\sqrt{x}}$

(d) $\lim_{x \to -1} \frac{2x^2+x-1}{x^2-2x-3}$

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

(f) $\lim_{x \to -2^+} \frac{x+3}{2x^2+7x+6}$

(g) $\lim_{x \to 1} \frac{\sqrt{x^2 + 3x} - 2}{x - 1}$

(h) $\lim_{x \to 0^+} \frac{-2\cos x}{\sin 5x}$

(i) $\lim_{x \to -4} \frac{|x + 4|}{x^2 - 16}$