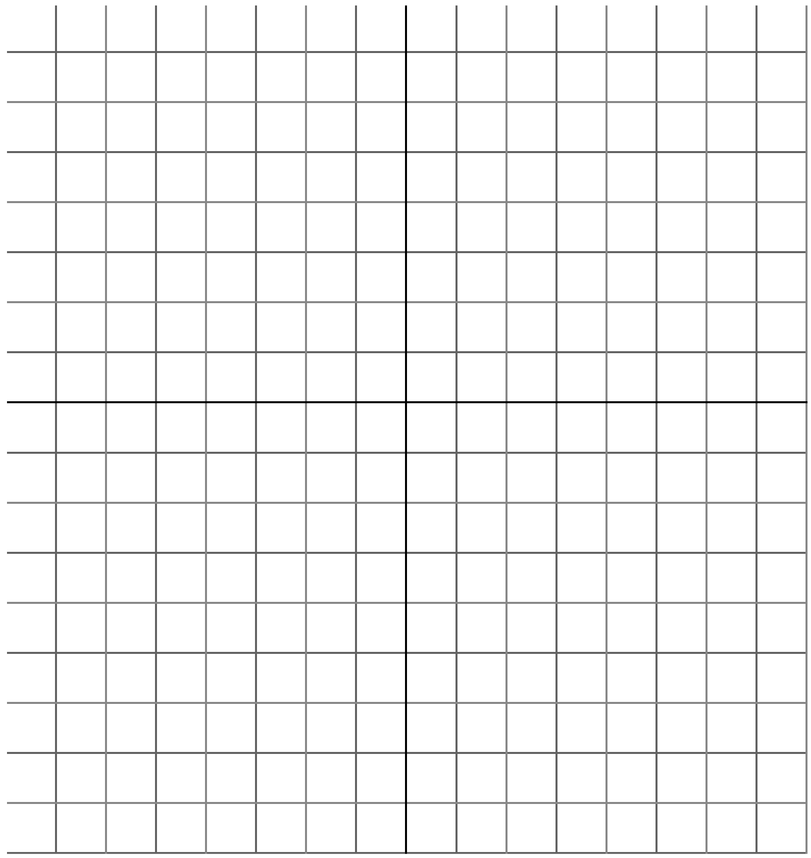
SI Session: January, 27th , 2009
Tuesdays: 3:30 PM – 5:00 PM
Thursdays: 1:30 PM – 3:00 PM
& 3:30 PM – 5:00 PM
Room 1245 SNAD

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

[1] Find the limit *L*. Then find $\delta > 0$ such that $\left|f(x) - L\right| < 0.01$ whenever $0 < \left|x - c\right| < \delta$.

$\lim_{x \to 5} \left(x^2 + 4\right)$



[2] Evaluate each limit.

(a) $\lim_{x \to -2} x^3$

(b) $\lim_{x \to 0} (2x-1)^3$

[3] Given $f(x) = 2x^2 - 3x + 1$ and $g(x) = \sqrt[3]{x+6}$, find the following limits.

(a) $\lim_{x \to 4} f(x)$

(b) $\lim_{x \to 21} g(x)$

(c) $\lim_{x \to 4} g\left[f(x)\right]$

[4] Find the following limits.

(a) $\lim_{x \to \frac{5\pi}{3}} \cos x$

(b) $\lim_{x \to 7} \sec\left(\frac{\pi x}{6}\right)$

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

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

(b) $\lim_{x \to 0} \frac{\sqrt{2+x}-\sqrt{2}}{x}$

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

(d) $\lim_{\Delta x \to 0} \frac{(x + \Delta x)^2 - x^2}{\Delta x}$

(e) $\lim_{x \to 0} \frac{3(1-\cos x)}{x}$

(f) $\lim_{\theta \to 0} \frac{\cos\theta \tan\theta}{\theta}$

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

(h) $\lim_{\phi \to \pi} \phi \sec \phi$

(i) $\lim_{x \to \frac{\pi}{4}} \frac{1 - \tan x}{\sin x - \cos x}$

(j) $\lim_{x \to 0} \frac{\sin 2x}{\sin 3x}$

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

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

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

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

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

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

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

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

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

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

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