Math 261 - Calculus I
Los Angeles City College - Spring 2002

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Instructions.Show your work on sepertae sheet(s) of papers.

1. Find the limit: (10 pts.)

$$\lim_{x\to 2}\frac{x^3-5x^2+6x}{x^3-8}$$

2. Find the limit: (10 pts.)

$$\lim_{x\to 2^-}\frac{1-\frac{4}{x^2}}{1-\frac{2}{x}}$$

3. Find $\lim_{x\to 3^-} f(x)$ where; $f(x) = \begin{cases} \frac{|x-2|}{x-2}, & x<2 \\ x, & x>2 \end{cases}$ (10 pts.)

4. Find the limit: (12 pts.)

$$\lim_{x\to 0}\frac{3x^2-\sin 4x}{4x}$$

5. Find the limit: (8 pts.)

$$\lim_{x\to 0}\frac{\sin 2x}{\tan x}$$

6. Find a value for the constant "a" such that the following function will be continious at x = 0 (15 pts.)

$$f(x) = \begin{cases} \frac{\sin 3x}{2x}, & x<0 \\ a & x\geq 0 \end{cases}$$

7. Find the limit: (10 pts.)

$$\lim_{x\to 1}(2-\frac{5}{(x-1)^2})$$

8. For the following piecewise-defined function: (25 pts.)

$$f(x) = \begin{cases} 1-x^2 & x\leq 0 \\ 2x+1 & 0<x<2 \\ 1-2x^3 & x>2 \end{cases}$$

a. $\lim_{x\to 2^-} f(x)$
b. $\lim_{x\to 2^+} f(x)$
c. $\lim_{x\to 2} f(x)$
d. $\lim_{x\to -\infty} f(x)$
e. $\lim_{x\to 0^-} f(x)$
f. $\lim_{x\to 0} f(x)$
g. Is $f(x)$ a continious function? Discuss.

h. $f(2)$

i. Graph $f(x)$