Calculus I / MAT 1214.901

Midterm 1 / February 12, 1998 / Instructor: D. Gokhman

Name: _____

Please show all work and box the answers.

1. (30 pts.) Solve the following inequalities for x and express the answer in interval notation.

$$\text{(a) } \frac{1}{x+1} \geq 1 \qquad \text{(b) } x^2 - 1 \leq 0 \qquad \text{(c) } |x-1| \geq 1$$

2. (10 pts.) Find the largest $\delta > 0$ such that $|x-1| < \delta \Rightarrow |2x-2| < 0.1$.

3. (40 pts.) In each case find the specified limit or state that it does not exist and briefly explain why.

$$\text{(a) } \lim_{x\to 1} \frac{x^3-1}{x-1} \qquad \text{(b) } \lim_{x\to 0} \frac{|x|}{x} \qquad \text{(c) } \lim_{x\to 1} \frac{\sin(x-1)}{x^3-1} \qquad \text{(d) } \lim_{x\to 1} \frac{x}{\sin x}$$

4. (32 pts.) Sketch the following functions

$$\text{(a) } f(x) = \frac{x-1}{x+1} \qquad \text{(b) } f(x) = x^2 - 1 \qquad \text{(c) } f(x) = \left|x^2 - 1\right| \qquad \text{(d) } f(x) = \frac{|x^2-1|}{x-1}$$

1	2	3	4	total (112)	%