Math 220 (section ???) **Quiz 3** **Fall 2010**

Name _____

- No calculators allowed.
- Show sufficient work to justify each answer.
- You have 20 minutes for this quiz.

1. (2 points) Determine the values of c and d so that $f(x)$ is continuous throughout its domain.

$$f(x) = \begin{cases} 3x - 5 & \text{for} \quad x < -2 \\ cx + d & \text{for} \quad -2 \leq x \leq 3 \\ 5 - 2x & \text{for} \quad x > 3 \end{cases}$$

2. (2 points each) Evaluate the following limits.

(a) $\lim_{x \to 0^+} \dfrac{5 - x^2}{1 - e^x}$

(b) $\lim_{x \to 5} \dfrac{x^2 - 25}{x^2 - 3x - 10}$

(c) $\lim_{x \to \infty} \dfrac{6x^2 + 5}{1 + 3x^2}$

3. (2 points) A function f satisfies the following inequality for all $x \neq 0$.

$$\frac{3x + 2\sin x}{2x} \leq f(x) \leq \frac{7x - 2\sin x}{2x}$$

Determine $\lim_{x \to 0} (f(x))$.