Name.....

UID.....

Math 1210-3

Quiz 4

February 8, 2008

Show all work for complete credit! There are two sides to this quiz!

1a) Find which step is wrong in the following computation, and explain why it was wrong:

$$\lim_{x\to 0} x\cot(3x) = \lim_{x\to 0} \frac{x\cos(3x)}{\sin(3x)} = \lim_{x\to 0} \frac{3x\cos(x)}{3\sin(x)} = \left(\lim_{x\to 0} \frac{x}{\sin(x)}\right)\left(\lim_{x\to 0} \cos(x)\right) = 1.$$

(2 points)

1b) Compute $\lim_{x\to 0} x\cot(3x)$ correctly.

(3 points)

2a) What value of a makes the function $f(x)$ continuous at $x = 1$?

$$f(x) = 2\,x + a, \text{ for } x \le 1;$$
$$f(x) = 2\,a\,x^2, \text{ for } 1 < x\,.$$

(3 points)

2b) Sketch the continuous function you found in (3a).

(2 points)