MA 113 Name _____

Quiz 3 Fall 2013

1. Evaluate the following limits

   (a)

   $$\lim_{x\to 0} x^2 \sin(\frac{1}{x})$$ Hint: What is the range of $\sin(\frac{1}{x})$?

   (b)

   $$\lim_{x\to 0} \frac{1-\cos(x)}{\sin^2(5x)}$$ Hint: Multiply by $\frac{1+\cos(x)}{1+\cos(x)}$.

2. Use the Intermediate Value Theorem to show that the function

   $$f(x) = 2x - x^2 \ln x$$

   has a zero in the interval $[1, e]$.