

Name: _____

Math 105B: Winter 2013

Quiz 6: March 29

Correct answers accompanied by incorrect or incomplete work will not receive full credit. **Justify all answers.** Good Luck!

1. Use the Intermediate Value Theorem to show that $f(x)$ has a root between -1 and 2.

$$f(x) = (\sin x - 4)(x^2 + 3x - 2)$$

2. A rocket that is launched vertically is tracked by a radar station located on the ground 4 mi from the launch site. What is the vertical speed of the rocket at the instant its distance from the radar station is 5 mi and this distance is increasing at the rate of 3600 mi/h?

3. Evaluate the following limit. If you use L'Hopital's rule verify that you can use it.

$$\lim_{x \rightarrow \infty} \frac{(\ln x)^2}{x}$$