**Math 1271 Quiz 5**

March, 6, 2014
Name: _____
TA: _____
NO CALCULATORS. NO HANDHELD DEVICES. NO BOOKS OR REFERENCE MATERIALS OF ANY KIND.
Time allowed: 20 minutes; Grader : Amit Sharma. Good luck!

1. (*35 points*)Use logarithmic differentiation to evaluate $\frac{dy}{dx}$

$$y = (x^2 + 5)^{\sin x}$$

2. (*15 points*) State whether the following statement is true or false:

$$\lim_{x \to 1} \frac{x^2 - 3x + 2}{x^2 + 4x} = \lim_{x \to 1} \frac{2x - 3}{2x + 4}$$

3. (*15 points*) State whether the following statement is true or false:

$$\frac{d}{dx}\left(\frac{x^{1091}}{e^x}\right) = \frac{(1091 - x)x^{1090}}{e^x}$$

*PLEASE SEE THE OTHER SIDE FOR MORE PROBLEMS.*

4. (*35 points*) Differentiate the following expression using the chain rule, i.e. evaluate $\frac{dy}{dx}$

$$y = \sqrt{x + \sqrt{x + \sqrt{2}}}.$$

*PLEASE SEE THE OTHER SIDE FOR MORE PROBLEMS.*