Math 1220, Section 5

March 16, 2011

Name: ____________________________

DANGER! You must follow these instructions:

- At minimum, please put your name on the first page plus, put your name and uID on the third page. Putting your name on each page will protect you from a staple malfunction catastrophe.
- Each problem has instructions that might give you hints or save you lots of work. Please read the instructions for each problem carefully.
- For each problem, please be sure that your final answer is easy to find. Perhaps draw a neat box around it.
- You can use the back of each page for extra space but please make a clear division between work for different problems, if you want partial credit. Ask for blank paper, if you need it.
- This test has 7 problems on 6 pages for a total of 50 points. Please be careful to count the pages and answer all of the questions.

Danger! All formulae are correct but you will not need most of them.

**Useful Limits**

- \(\lim_{x \to \infty} \frac{1}{x} = 0\)
- \(\lim_{x \to 0^+} \frac{1}{x} = \infty\)
- \(\lim_{x \to 0^-} \frac{1}{x} = -\infty\)
- \(\lim_{x \to \infty} e^x = \infty\)
- \(\lim_{x \to \infty} e^{-x} = 0\)
- \(\lim_{x \to \infty} \ln(x) = \infty\)
- \(\lim_{x \to 0^+} \ln(x) = -\infty\)

**Useful Trigonometry**

- \(\cos^2(x) + \sin^2(x) = 1\)
- \(\tan(x) = \frac{\sin(x)}{\cos(x)}\)
- \(\sec(x) = \frac{1}{\cos(x)}\)

**Useful Derivatives**

- \(\frac{d}{dx} \tan(x) = \sec^2(x)\)
- \(\frac{d}{dx} \sec(x) = \sec(x) \tan(x)\)

**Completing The Square**

- \(ax^2 + bx + c = a \left(x + \frac{b}{2a}\right)^2 + \left(c - \frac{b^2}{4a}\right)\)