Math 220 **Quiz 12 (take-home)** **Fall 2015**

Name _____

(circle your TA discussion section)

- ▷ **AD1**, TR 11:00-12:50, Derek Jung
- ▷ **AD2**, TR 9:00-10:50, Claire Merriman
- ▷ **AD3**, TR 1:00-2:50, Itziar Ochoa de Alaiza Gracia
- ▷ **ADA**, TR 8:00-8:50, Dara Zirlin
- ▷ **ADB**, TR 9:00-9:50, Dara Zirlin
- ▷ **ADC**, TR 10:00-10:50, Xujun Liu
- ▷ **ADD**, TR 11:00-11:50, Christopher Linden
- ▷ **ADE**, TR 12:00-12:50, Christopher Linden
- ▷ **ADF**, TR 1:00-1:50, Alyssa Loving
- ▷ **ADG**, TR 2:00-2:50, Xianchang Meng
- ▷ **ADH**, TR 3:00-3:50, Xianchang Meng
- ▷ **ADI**, TR 4:00-4:50, Aaron Schneberger
- ▷ **ADJ**, TR 9:00-9:50, Elizabeth Field
- ▷ **ADK**, TR 10:00-10:50, Elizabeth Field
- ▷ **ADL**, TR 11:00-11:50, Emily Heath
- ▷ **ADM**, TR 12:00-12:50, Alyssa Loving
- ▷ **ADN**, TR 1:00-1:50, Aaron Schneberger
- ▷ **ADO**, TR 2:00-2:50, Tigran Hakobyan
- ▷ **ADP**, TR 3:00-3:50, Tigran Hakobyan
- ▷ **ADR**, TR 9:00-9:50, Xujun Liu
- ▷ **ADS**, TR 12:00-12:50, Emily Heath
- ▷ **ADT**, TR 2:00-2:50, Argen West
- ▷ **ADU**, TR 3:00-3:50, Argen West

- You may work with other MATH 220 students. However each student should write up solutions separately and independently – nobody should copy someone else's work.
- You may use your notes, the textbook, or information found on my course home page.
- You may use a calculator only for basic arithmetic on problems 2 and 3.
- You are not allowed to search the Internet, use Wolfram Alpha, or use technology for anything beyond what is stated above.
- There is a higher expectation for the quality of your work on a take-home quiz. Everything should be written logically and legibly with sufficient work to justify each answer. Blank copies of the quiz are available on the course home page.
- Be sure that the pages are nicely stapled – do not just fold the corners.
- **The quiz is due at the beginning of your official lecture period on Friday, November 20.**
- **Note to TAs and Tutors – you should not help students with these specific problems until I post solutions Friday evening.**

1. (3 points) A calculator gives an estimate of 0.8187307531 for the value of $\dfrac{e^2}{\sqrt[5]{e^{11}}}$

   Using the techniques of linear approximation found in section 3.10, show that you are able to obtain a very similar estimate of 0.8 without the use of any technology.

2. (3 points) Let $g(x) = \displaystyle\int_{-25}^{x^2} f(t)\,dt$. Use the techniques of linear approximation found in section 3.10 to approximate $g(4.8)$ given the following information about f.

   - f is continuous on the interval $(-\infty, \infty)$
   - f is an odd function
   - $f(25) = \dfrac{1}{8}$

3. (4 points) The function $g(x) = x^4 + 3x^2 - 5x$ has precisely one critical number. Determine the value of this critical number using Newton's Method with an initial estimate of $x_1 = 1$. You should use this method 3 times in order to obtain estimates x_2, x_3 and x_4. You are only allowed to use technology for basic arithmetic. Use at least 5 decimal places in each estimate.