

Name \_\_\_\_\_

(circle your TA discussion section)

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| ▷ <b>AD1</b> , TR 9:00-10:50, Hannah Burson          | ▷ <b>ADH</b> , TR 3:00-3:50, Dara Zirlin            |
| ▷ <b>AD2</b> , TR 1:00-2:50, Cassie Christenson      | ▷ <b>ADJ</b> , TR 9:00-9:50, Xujun 'Henry' Liu      |
| ▷ <b>ADA</b> , TR 8:00-8:50, Iftikhar Ahmed          | ▷ <b>ADK</b> , TR 10:00-10:50, Xujun 'Henry' Liu    |
| ▷ <b>ADB</b> , TR 9:00-9:50, Iftikhar Ahmed          | ▷ <b>ADL</b> , TR 11:00-11:50, Jooyeon 'Jane' Chung |
| ▷ <b>ADC</b> , TR 10:00-10:50, Elizabeth 'Liz' Tatum | ▷ <b>ADM</b> , TR 12:00-12:50, Jooyeon 'Jane' Chung |
| ▷ <b>ADD</b> , TR 11:00-11:50, Elizabeth 'Liz' Tatum | ▷ <b>ADN</b> , TR 1:00-1:50, Xiaolong 'Hans' Han    |
| ▷ <b>ADE</b> , TR 12:00-12:50, Emily Heath           | ▷ <b>ADO</b> , TR 2:00-2:50, Martino Fassina        |
| ▷ <b>ADF</b> , TR 1:00-1:50, Emily Heath             | ▷ <b>ADP</b> , TR 3:00-3:50, Martino Fassina        |
| ▷ <b>ADG</b> , TR 2:00-2:50, Dara Zirlin             | ▷ <b>ADQ</b> , TR 4:00-4:50, Xiaolong 'Hans' Han    |

- 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.
- 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, April 22.**
- **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  $\frac{e^2}{\sqrt[5]{e^{11}}}$ .

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  $g(x) = \int_{-125}^{x^3} f(t) dt$ .

Use the techniques of linear approximation found in section 3.10 to approximate  $g(5.6)$  given the following information about  $f$ .

- $f$  is continuous on the interval  $(-\infty, \infty)$
- $f$  is an odd function
- $f(125) = \frac{1}{150}$

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.