

Name _____

(circle your TA discussion section)

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|---|---|
| ▷ AD1 , TR 11:00-12:50, Adriana Morales | ▷ ADJ , TR 9:00-9:50, Gayana Jayasinghe |
| ▷ AD2 , TR 9:00-10:50, Hannah Burson | ▷ ADK , TR 10:00-10:50, Madina Bolat |
| ▷ AD3 , TR 1:00-2:50, Dana Neidinger | ▷ ADL , TR 11:00-11:50, Chris Loa |
| ▷ ADA , TR 8:00-8:50, Gayana Jayasinghe | ▷ ADM , TR 12:00-12:50, Heeyeon Kim |
| ▷ ADB , TR 9:00-9:50, Felix Clemen | ▷ ADN , TR 1:00-1:50, Josh Wen |
| ▷ ADC , TR 10:00-10:50, Lutian Zhao | ▷ ADO , TR 2:00-2:50, Kesav Krishnan |
| ▷ ADD , TR 11:00-11:50, Gidon Orelowitz | ▷ ADQ , TR 10:00-10:50, Felix Clemen |
| ▷ ADE , TR 12:00-12:50, Josh Wen | ▷ ADR , TR 9:00-9:50, Madina Bolat |
| ▷ ADF , TR 1:00-1:50, Nachiketa Adhikari | ▷ ADS , TR 12:00-12:50, Chris Loa |
| ▷ ADG , TR 2:00-2:50, Lutian Zhao | ▷ ADT , TR 2:00-2:50, Nachiketa Adhikari |
| ▷ ADH , TR 3:00-3:50, Stathis Chrontsios | ▷ ADU , TR 3:00-3:50, Kesav Krishnan |
| ▷ ADI , TR 4:00-4:50, Stathis Chrontsios | ▷ ADZ , TR 9:00-9:50, Gidon Orelowitz |

- You may lose points if you do not circle your correct discussion section.
- 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 including old test and quiz solutions.
- The only computational technology allowed is a calculator for basic arithmetic (+, −, ×, ÷).
- 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 lecture period on Friday, November 30th.**
- **TAs and Tutors – Do not help students with these specific problems until the quizzes have been collected for all MATH 220 lectures (10am, 1pm, 3pm).**

1. (3 points) A calculator gives an estimate of 4.979878868 for the value of $\sqrt[4]{615}$.

Using the techniques of linear approximation found in section 3.10, show that it is possible to obtain a very similar estimate of 4.98 without the use of any technology.

2. (3 points) Suppose that $f(x)$ and $g(x)$ are differentiable everywhere and satisfy the following conditions.

- $f(x)$ is an odd function
- $g(x)$ is an even function
- $f(-2) = 8$
- $g(-2) = -3$
- $f'(2) = 1/6$
- $g'(2) = 1/4$

Let $w(x) = f(x)g(x)$. Use the properties of even and odd functions along with the techniques of linear approximation found in section 3.10 to estimate the value of $w(2.2)$. Simplify your answer.

3. (4 points) There is one value of x for which the y -value on the graph of $g(x) = 2x^3 + 10x + 9$ is twice as large as the y -value on the graph of $h(x) = 3x + 15$. Approximate this value of x 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.