

Name _____

(circle your TA discussion section)

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| ▷ AD1 , TR 9:00-10:50, Nick Andersen | ▷ ADH , TR 3:00-3:50, Nathan Rehfuss |
| ▷ AD2 , TR 1:00-2:50, Sarah Loeb | ▷ ADJ , TR 9:00-9:50, Dan Schultz |
| ▷ ADA , TR 8:00-8:50, Lisa Hickok | ▷ ADK , TR 10:00-10:50, Dan Schultz |
| ▷ ADB , TR 9:00-9:50, Sneha Chaubey | ▷ ADL , TR 11:00-11:50, Derrek Yager |
| ▷ ADC , TR 10:00-10:50, Sneha Chaubey | ▷ ADM , TR 12:00-12:50, Derrek Yager |
| ▷ ADD , TR 11:00-11:50, Tom Mahoney | ▷ ADN , TR 1:00-1:50, Ben Fulan |
| ▷ ADE , TR 12:00-12:50, Tom Mahoney | ▷ ADO , TR 2:00-2:50, Ben Fulan |
| ▷ ADF , TR 1:00-1:50, Lisa Hickok | ▷ ADP , TR 3:00-3:50, Mahmood Etedadi Aliabadi |
| ▷ ADG , TR 2:00-2:50, Nathan Rehfuss | ▷ ADQ , TR 4:00-4:50, Mahmood Etedadi Aliabadi |

- 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 or the textbook.
- Computers are not allowed on any problem. You may use a calculator only for basic arithmetic.
- The quiz should be submitted to Mr. Murphy at the beginning of your official lecture period on Friday, April 19th.
- 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.
- **Note to TAs and Tutors – you should not help students with these specific problems or go over solutions until after 5pm Friday.**

1. (6 points) Use the techniques of linear approximation to estimate the following quantities. Write each answer in decimal form. No technology is allowed on this problem.

(a) $\ln(0.9)$

(b) $\sqrt{104}$

2. (4 points) There is one value of x for which the line tangent to the graph of $f(x) = x^4$ is parallel to the line tangent to the graph of $g(x) = x^3 + 5x + 2$. Determine this x -value 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.