

Name \_\_\_\_\_

(circle your TA discussion section)

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| ▷ <b>AD1</b> , TR 11:00-12:50, Andrew McConvey  | ▷ <b>ADJ</b> , TR 9:00-9:50, Kyle Pratt        |
| ▷ <b>AD2</b> , TR 9:00-10:50, Ben Wright        | ▷ <b>ADK</b> , TR 10:00-10:50, Kyle Pratt      |
| ▷ <b>AD3</b> , TR 1:00-2:50, Cassie Christenson | ▷ <b>ADL</b> , TR 11:00-11:50, Tigran Hakobyan |
| ▷ <b>ADA</b> , TR 8:00-8:50, Alexi Block Gorman | ▷ <b>ADM</b> , TR 12:00-12:50, Liz Tatum       |
| ▷ <b>ADB</b> , TR 9:00-9:50, Dakota Ihli        | ▷ <b>ADN</b> , TR 1:00-1:50, Xujun 'Henry' Liu |
| ▷ <b>ADC</b> , TR 10:00-10:50, Elizabeth Field  | ▷ <b>ADO</b> , TR 2:00-2:50, Tigran Hakobyan   |
| ▷ <b>ADD</b> , TR 11:00-11:50, Adam Wagner      | ▷ <b>ADP</b> , TR 3:00-3:50, Liz Tatum         |
| ▷ <b>ADE</b> , TR 12:00-12:50, Adam Wagner      | ▷ <b>ADQ</b> , TR 10:00-10:50, Dakota Ihli     |
| ▷ <b>ADF</b> , TR 1:00-1:50, Tsutomu Okano      | ▷ <b>ADR</b> , TR 9:00-9:50, Elizabeth Field   |
| ▷ <b>ADG</b> , TR 2:00-2:50, Xujun 'Henry' Liu  | ▷ <b>ADS</b> , TR 12:00-12:50, Tsutomu Okano   |
| ▷ <b>ADH</b> , TR 3:00-3:50, Mychael Sanchez    | ▷ <b>ADT</b> , TR 2:00-2:50, Anna Weigandt     |
| ▷ <b>ADI</b> , TR 4:00-4:50, Mychael Sanchez    | ▷ <b>ADU</b> , TR 3:00-3:50, Anna Weigandt     |

- 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. In particular you should not use its graphing features.
- 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, October 14.**
- **Note to TAs and Tutors – you should not help students with these specific problems or go over solutions until the quizzes have been collected for all of my lectures (9am, noon, 1pm).**

1. (2 points) Evaluate  $\lim_{x \rightarrow \infty} \left(1 + \frac{2}{3x^2}\right)^{6x^2}$

2. (3 points) For each  $x > 0$ , let  $m(x)$  be the slope of the line which goes through the point  $(0, 0)$  and the point  $(x, y)$  on the curve  $y = x^2 e^{-0.25x}$ .

What is the largest possible value for  $m(x)$  ?

3. (3 points) What are the coordinates  $(x, y)$  for the highest point on the graph of the function

$$f(x) = \frac{e^{6x}}{e^{9x} + 4} ?$$

4. (2 points) Complete the sentences concerning the function  $f(x) = 3 + 4xe^{-5x}$  . You must fully justify each answer.

(a) The function  $f$  is decreasing on the interval \_\_\_\_\_

(b) The function  $f$  is increasing on the interval \_\_\_\_\_

(c) The function  $f$  is concave down on the interval \_\_\_\_\_

(d) The function  $f$  is concave up on the interval \_\_\_\_\_