Name ________________________________

(circle your TA discussion section)

- AD1, TR 11:00-12:50, Adriana Morales
- AD2, TR 9:00-10:50, Hannah Burson
- AD3, TR 1:00-2:50, Dana Neidinger
- ADA, TR 8:00-8:50, Gayana Jayasinghe
- ADB, TR 9:00-9:50, Felix Clemen
- ADC, TR 10:00-10:50, Lutian Zhao
- ADD, TR 11:00-11:50, Gidon Orelowitz
- ADE, TR 12:00-12:50, Josh Wen
- ADF, TR 1:00-1:50, Nachiketa Adhikari
- ADG, TR 2:00-2:50, Lutian Zhao
- ADH, TR 3:00-3:50, Stathis Chrontsios
- ADI, TR 4:00-4:50, Stathis Chrontsios

- ADJ, TR 9:00-9:50, Gayana Jayasinghe
- ADK, TR 10:00-10:50, Madina Bolat
- ADL, TR 11:00-11:50, Chris Loa
- ADM, TR 12:00-12:50, Heeyeon Kim
- ADN, TR 1:00-1:50, Josh Wen
- ADO, TR 2:00-2:50, Kesav Krishnan
- ADQ, TR 10:00-10:50, Felix Clemen
- ADR, TR 9:00-9:50, Madina Bolat
- ADS, TR 12:00-12:50, Chris Loa
- ADT, TR 2:00-2:50, Nachiketa Adhikari
- ADU, TR 3:00-3:50, Kesav Krishnan
- 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.
- You are not allowed to use a calculator, Wolfram Alpha, or any similar technology.
- 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, October 19th.
- 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 function $f(x)$ is differentiable on the interval $(-\infty, \infty)$. Its first derivative is given below. Find the intervals of concavity and the $x$-value for each inflection point of $f(x)$.

$$f'(x) = e^{2x} (4x^3 - 18x^2 + 18x - 9)$$
2. (3 points) Evaluate the following limit.

\[
\lim_{x \to 0} (\cos(4x))^{1/x^2}
\]
3. (4 points) Determine the largest possible area for a rectangle which satisfies all three of the following conditions.

- The rectangle's bottom edge lies on the x-axis.
- The rectangle's bottom left corner is the point (0, 0).
- The rectangle's top right corner is the point \((x, y)\) on the curve \(y = 2x^2e^{-x^2/2}\) with \(x > 0\).