

Name _____

(circle your TA discussion section)

- | | |
|--|--|
| ▷ AD1 , TR 11:00-12:50, Mina Nahvi | ▷ ADJ , TR 9:00-9:50, Robert "Bob" Krueger |
| ▷ AD2 , TR 9:00-10:50, Adriana Morales | ▷ ADK , TR 10:00-10:50, Sarah Simpson |
| ▷ AD3 , TR 1:00-2:50, Vincent Villalobos | ▷ ADL , TR 11:00-11:50, Rocco Davino |
| ▷ AD@ , TR 9:00-9:50, Phuong "Sophie" Le | ▷ ADM , TR 12:00-12:50, Dara Zirlin |
| ▷ ADA , TR 8:00-8:50, Scott Harman | ▷ ADN , TR 1:00-1:50, John "Connor" Grady |
| ▷ ADB , TR 9:00-9:50, Lutian Zhao | ▷ ADO , TR 2:00-2:50, Shuyu "Sonya" Xiao |
| ▷ ADC , TR 10:00-10:50, Lutian Zhao | ▷ ADQ , TR 10:00-10:50, Saaber Pourmotabbed |
| ▷ ADD , TR 11:00-11:50, Dara Zirlin | ▷ ADR , TR 9:00-9:50, Scott Harman |
| ▷ ADE , TR 12:00-12:50, David Altizio | ▷ ADS , TR 12:00-12:50, Rocco Davino |
| ▷ ADF , TR 1:00-1:50, Saaber Pourmotabbed | ▷ ADT , TR 2:00-2:50, Ryan McConnell |
| ▷ ADG , TR 2:00-2:50, John "Connor" Grady | ▷ ADU , TR 3:00-3:50, Shuyu "Sonya" Xiao |
| ▷ ADH , TR 3:00-3:50, Sarah Simpson | ▷ ADW , TR 8:00-8:50, Robert "Bob" Krueger |
| ▷ ADI , TR 4:00-4:50, Ryan McConnell | |

- 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 their 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 Monday, November 4th.**
- **TAs and Tutors – Do not help students with these specific problems until the quizzes have been collected for all MATH 220 lectures (10-10:50am, 1-1:50pm, 3-3:50pm).**

1. (2 points) Determine a formula for $f(x)$ given that it satisfies the following conditions.

- $f'(x) = \frac{6x^5 + x^3 - 5x + 8}{x^2 + 1}$

- $f(1) = 2\pi - 5$

2. (2 points) Evaluate the following limit. Use proper notation in each step.

$$\lim_{n \rightarrow \infty} \sum_{k=1}^n \left(\frac{2k^4 \left(6 - \frac{n}{k}\right) - (4kn)^2}{k^2 n^3} \right)$$

3. (2 points) From section 5.2 we have the following property of definite integrals.

If $f(x)$ is continuous and $m \leq f(x) \leq M$ for $a \leq x \leq b$, then $m(b - a) \leq \int_a^b f(x) dx \leq M(b - a)$

Use this property to carefully explain why the following inequality holds.

$$0.5 \leq \int_{-1}^8 \left(15 + \frac{6}{\pi} \arctan \left(\sqrt[3]{42 + (5x)^{99}} \right) \right)^{-1} dx \leq 0.75$$

4. (2 points) At time t seconds, the velocity of an object is given by $v(t) = 50t^3e^{-t}$ meters per second. Using proper notation, express the distance in meters traveled by this object between times $t = 1$ and $t = 5$ in the following two ways.

(i) A definite integral. Do not evaluate this integral.

(ii) A limit of right Riemann sums. Do not evaluate this limit.

5. (2 points) Suppose that $f(x)$ is continuous at all real numbers and satisfies the following equations.

- $\int_3^{12} 2f(x) dx = 26$

- $\int_8^6 3f(x) dx = -15$

- $\int_8^{12} 4f(x) dx = -4$

What is the value of $\int_3^6 (2 - 5f(x)) dx$?