

Math 1232 Midterm

Instructor: Jay Daigle

1. This test is due Tuesday, March 2 at 7 PM. Logistically, this will work just like the mastery quizzes: download it, write up your answers, and upload them to Blackboard for us to grade.
2. You will have two hours for this test. Please write down your start and end times on the test and include that in your upload. You may not spend more than two hours on the test unless you have a specific accommodation.
3. You are not allowed to consult books or notes during the test, but you may use a one-page, two-sided cheat sheet you have made for yourself ahead of time. Please upload your sheet along with your test.
4. If you have questions, I will be online and responsive during the usual class times. If you want to take the test at a time you know I'll be able to answer any questions quickly, I encourage you to use one of those time slots.
5. You may use a calculator, but don't use a graphing calculator or anything else that can do symbolic computations. Using a calculator for basic arithmetic is fine.

Name:

Time Started:

Time Completed:

Problem 1. (a) Let $f(x) = \sqrt{x^5 + 3x^3 + 5x}$. Find $(f^{-1})'(3)$.

(b) Find $\lim_{x \rightarrow 0} \frac{\sin(x)}{e^{3x} - 1}$.

(c) Compute the following. In all cases your answers should be exact, with no decimals, and no logs or exponentials or trig functions.

$$\log_2(8) + \log_2(6) - \log_2(3)$$

$$\arctan(\sqrt{3}) =$$

$$\sin(\arctan(4/3)) =$$

Problem 2. (a) Compute $f'(x)$ where $f(x) = \arcsin \log_3(x^2)$.

(b) Find the tangent line to $h(x) = e^{x^2-1}$ at -1 .

(c) Use the Trapezoid rule and five intervals to estimate $\int_{-2}^3 x^2 - x \, dx$.

Problem 3. Compute the following integrals:

(a) $\int 2x^3 \sin(x^2) dx =$

(b) $\int \frac{3x - 3}{(x + 1)(x - 2)} dx =$

(c) $\int_0^1 \frac{1}{\sqrt{x^2 + 1}} dx =$

Problem 4. (a) $\int_{-1}^1 \frac{dx}{\sqrt[3]{x}} =$

(b) Set up (but do not compute!) an integral for the arc length of the curve $y = x^2 + 2x$ between $x = 0$ and $x = 2$.

(c) What is the surface area of the curve $y = x^2 + 2$ between $x = 0$ and $x = 2$ rotated around the y -axis?