

Math 21B

Midterm 2.1

Please PRINT your name here:

Please SIGN your name here: _____

Your Student ID number: _____

1. PLEASE DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.
2. IT IS A VIOLATION OF THE UNIVERSITY HONOR CODE TO, IN ANY WAY, ASSIST ANOTHER PERSON IN THE COMPLETION OF THIS EXAM. PLEASE KEEP YOUR OWN WORK COVERED UP AS MUCH AS POSSIBLE DURING THE EXAM SO THAT OTHERS WILL NOT BE TEMPTED OR DISTRACTED.
3. You may NOT use a calculator on this exam.
4. No notes, books, or classmates may be used as resources for this exam.
5. Read directions to each problem carefully. Show all work for full credit. In most cases, a correct answer with no supporting work will NOT receive full credit. What you write down and how you write it are the most important means for getting a good score on this exam. Neatness and organization are also important.
6. You have until 4:00 p.m. to finish the exam. PLEASE STOP WRITING IMMEDIATELY when time is called and close your exam.
7. Make sure that you have 4 pages including the cover page.

1. (10 pts, 2-each) True or False (Circle One)

True or False: If $a > 0$, then $a^3 a^2 = a^{3 \cdot 2} = a^6$.

True or False: A definite integral may be used to calculate fluid pressures on objects submerged at different depths.

True or False: The Law of Exponential Change can be used to model processes of both growth and decay.

2. (10 pts) Calculate the surface area of a sphere of radius R by revolving the semi-circle given by,

$$x(t) = R \cos(t), \quad y(t) = R \sin(t), \quad 0 \leq t \leq \pi,$$

around the x -axis.

3. (10pts) Find the work required in ft · lbs, to compress a spring from its natural length of 1ft to a length of 1/4ft if the spring constant is 22 lb/ft.

4. (10 pts, 5-each) Find the following indefinite integrals:

a.) $\int 3^{t+2} dt$

b.) $\int \frac{1-x}{\sqrt{1-x^2}} dx$