

TEST 1

Math 152 - Calculus II

Score: _____ out of 100

9/21/2012

Name: _____

Read all of the following information before starting the exam:

- You have 50 minutes to complete the exam.
- Show all work, clearly and in order, if you want to get full credit. Please make sure you read the directions for each problem. I reserve the right to take off points if I cannot see how you arrived at your answer (even if your final answer is correct).
- Please box/circle or otherwise indicate your final answers.
- Please keep your written answers brief; be clear and to the point. I will take points off for rambling and for incorrect or irrelevant statements.
- This test has 7 problems and is worth 100 points. It is your responsibility to make sure that you have all of the pages!
- Good luck!

1. Find the average value of $f(x) = \sin(2x)$ on $[0, \pi/4]$.

2. Find the area enclosed by the curves $y = x^2 - 1$, $y = -1$, $x = 2$ and $x = 3$.

3. **Set up but do not evaluate the integral** for the volume of the solid obtained by rotating the region bounded by $y = 1 - x^2$ and $y = 1 - x$ about the x -axis.

4. **Set up but do not evaluate the integral** for the volume of the solid obtained by rotating the region bounded by $y = 1 - x^2$ and $y = 1 - x$ about the line $x = -1$.

5. **Set up but do not evaluate the integral** for the length of the curve $y = \sin(x)$ from $x = 0$ to $x = 3\pi$.

6. A force of 10 N is required to hold a spring that has been stretch from its natural length of 0.2 m to a length of 0.3 m. How much work is done in stretching the spring from 0.3 m to 0.4 m?

PICK ONE OF THE FOLLOWING:

7. Please indicate which one you do NOT want me to grade by putting an X through it, otherwise I will grade the first one worked on:

(a) Evaluate $\int \tan^{-1}(x)dx$.

(b) Evaluate $\int x^2 \cos(x)dx$.