

# TEST 2

Math 152 - Calculus II

Score: \_\_\_\_\_ out of 100

10/10/2012

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 8 problems and is worth 100 points. It is your responsibility to make sure that you have all of the pages!
- Good luck!

1. Evaluate  $\int \cos^3(5x) \sin^5(5x) dx$ .

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

3. Evaluate  $\int \frac{\sqrt{x^2 - 4}}{x} dx$ .

4. Evaluate  $\int \frac{x - 1}{x^2 + 3x + 2} dx$ .

5. Evaluate  $\int_{-\infty}^0 e^{5x} dx$ .

6. Evaluate  $\int_4^5 \frac{1}{x-5} dx$ .

7. (a) Perform long division on the following rational function to find the missing constants:

$$\frac{x^3 - 1}{x + 2} = ax^2 + bx + c + \frac{d}{x + 2}.$$

- (b) Use part (a) to evaluate  $\int \frac{x^3 - 1}{x + 2} dx$ .

8. Write out the FORM of the partial fraction decomposition for the following (DO NOT find the numerical values for the unknown coefficients).

(a)  $\frac{x^3 + x^2 + 1}{x(x - 1)(x^2 + 1)^2} =$

(b)  $\frac{x^2 + 10}{x^3(x^2 + 4)} =$

(c)  $\frac{4x - 1}{(x - 4)^2(x + 3)(x^2 + 9)} =$