TEST 1

Math 152 - Calculus II **Score:** _____ out of 100

2/8/2013 **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:

   (a) $\int \sec^2(x)\sqrt{1+\tan(x)}dx.$

   (b) $\int \frac{\sin(2x)}{1+\cos(2x)}dx.$

2. Find the average value of $f(x) = \frac{e^x}{(1+e^x)^{1/3}}$ on $[1,3]$.

3. Find the area enclosed by the curves $y = x+2$, $y = xe^{(-x^2)}$, $x = 0$ and $x = 2$.

4. Find the volume of the solid obtained by rotating the region bounded by $x = y^2$, $x = 1$ and $y \leq 0$ about the line $x = -2$ using **any method**.

5. **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 $y = x - 1$ about the line $y = 3$ **using the Washer/Disk Method**.

6. **Set up but do not evaluate the integral** for the volume of the solid obtained by rotating the region bounded by $y = e^{2x} + 1$, $y = e^x$, $x = 1$ and $x = 2$ about the line $x = -1$ **using the (cylindrical) Shell Method**.

7. **Set up but do not evaluate the integral** for the length of the curve $y = \sin^2(x)$ from $x = 1$ to $x = 3$.

8. **Set up but do not evaluate the integral** for the surface area of the solid formed by rotating the portion of curve $y = e^{(1+3x^2)}$ from $x = 1$ to $x = 3$ about the x-axis.