MAT 202
Assignment 7
Monday, August 5, 2013

For full credit on these problems, each must be submitted with a complete and clear solution, showing all of your work. You may work with other classmates on these problems, but please indicate on your assignment if you received help. Partial answers and incomplete solutions may be eligible for some partial credit, depending on the level of completeness and demonstrated understanding.

1. Evaluate the following anti-derivatives.

   (a) $\int \frac{5}{e^{2x}+1}\, dx$

   (b) $\int \frac{dx}{x^{1/4}+x^{1/3}}$

   (c) $\int \frac{x\, dx}{x^4+16}$

   (d) $\int \frac{dx}{x\sqrt{x^2-4}}$

   (e) $\int x \cos x \, dx$

   (f) $\int x^4 \, e^{2x}\, dx$

   (g) $\int \arctan x \, dx$

2. Find arc length of the graphs of $y = \ln(\cos x)$ from $x = 0$ to $x = \pi/3$.

3. Consider the region abounded by the graphs of $x = 0, y = \cos(x^2), y = \sin(x^2)$ and $x = \sqrt{\pi}/2$. Find the volume of the solid generated by revolving the region about the y-axis.

4. Consider the region bounded by the graphs of $y = \ln x, y = 0$, and $x = e$. Find

   (a) The area of the region.

   (b) The volume of the solid generated by revolving the region about the x-axis.

   (c) The volume of the solid generated by revolving the region about the y-axis.

   (d) The centroid of the region.