MAT 202
Assignment 4
Monday, July 22, 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 and integrals.
   (a) $\int x^3 + 2x^2 - 1\,dx$
   (b) $\int_0^2 \frac{x}{\sqrt{1+2x^2}}\,dx$
   (c) $\int \frac{dx}{\sqrt{16-x^2}}$
   (d) $\int \frac{2x-1}{x^2+4x+12}\,dx$
   (e) $\int \frac{dx}{(x-1)\sqrt{x^2-2x}}$
   (f) $\int \frac{x^2+4x+1}{x-2}\,dx$
   (g) $\int \frac{dx}{x^2+8x-20}$
2. Find the average value of the function $f(x) = \sec x$ on the interval $[0, \pi/4]$.
3. Find the area of the region enclosed by the graphs of the functions
   $$f(x) = x^4 - 6x^3 + 21x^2 - 14x - 1$$
   and
   $$g(x) = 3x^3 - 2x^2 + x - 1.$$
4. For the curves given by $x = 4 - y^2$ and $x = y - 2$, find the area of the region between the two curves by
   (a) integrating with respect to x.
   (b) integrating with respect to y.
   (c) Which method was simpler? Why?