Calculus II ESP

Worksheet 2

Name:

1. What is the MLC? Where is it? When are Jessica's office hours? When are Emma's office hours? What items can you borrow there to use in your studying? How can you check the schedule for when other TAs and tutors will be there?

2. Sketch and set up integrals for the area of the regions bounded by the given curves. Do not evaluate the integrals.

   (a) $y = x^2$ and $y = 12 - x$

   (b) $y = x^2, y = x + 2, x = 0$, and $x = 2$

   (c) $y = x^3$ and $y = x$

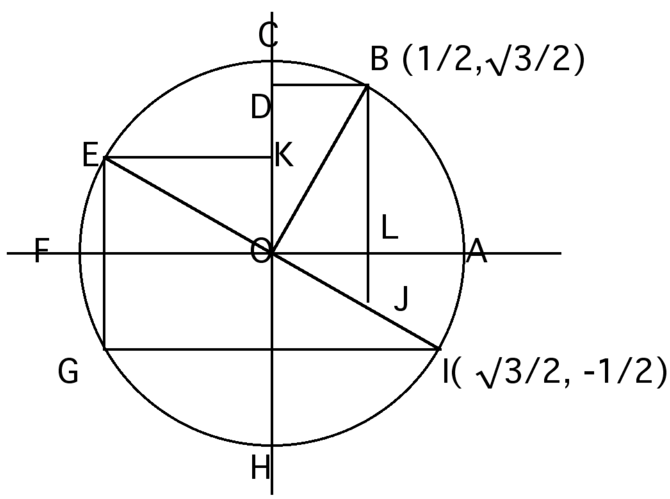
   (d) $x = y^2$ and $y = x - 2$

   (e) $x = sin(y)$ $x = 0$, $y = 0$,$y = \pi$

3. Evaluate $\int sec^2(x)tan(x)dx$ two ways: once with the substitution $u = sec(x)$ and once with the substitution $t = tan(x)$. Do you get the same answer? Can both answers be valid? What if you do a definite integral $\int_{\pi/6}^{\pi/4} sec^2(x)tan(x)dx$, does it matter which substitution you choose?

4. Evaluate $\displaystyle\int \frac{dx}{(2+\sqrt{x})^3}$ using $u = 2 + \sqrt{x}$.

5. Set up integrals for computing areas of the regions given in the unit circle shown below. You do not need to evaluate any of your integrals.



(i) half-cap ABL
(ii) half-cap BCD
(iii) wedge COE
(iv) triangle EGI
(v) triangle BOJ
(vi) cap GHI
(vii) region EFGHO
(viii) region BLJIA

6. Suppose a, b, and c are constants with $b^2 - 4ac = 0$. Find $\displaystyle\int \frac{1}{ax^2+bx+c}dx$. Would this method also work if $b^2 - 4ac \neq 0$?