MATH 3B

Discussion Worksheet - Thursday, April 19

More U-Subs:

- Practice: For each of the following integrals, determine if (1) it is a u-sub problem and if so, (2) find u and (3) compute du. Be careful, some are tricky!

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

(2) $\displaystyle\int \frac{3+\sqrt{x}}{x^3}\,dx$

(3) $\displaystyle\int_0^{\pi/3} \frac{\sin\theta + \sin\theta\tan^2\theta}{\sec^2\theta}\,d\theta$

(4) $\displaystyle\int_{-1}^{2} (t-2|t|)\,dt$

(5) $\displaystyle\int \frac{x}{1+x^4}\,dx$

(6) $\displaystyle\int_0^1 x\sqrt{1-x^4}\,dx$

Area Between Curves:

- The area between the curves $y=f(x)$ and $y=g(x)$ and between $x=a$ and $x=b$ is given by

- Strategy:

- Example: Find the area between the curves given by $y=x^2-2x$ and $y=x+4$.

- Sometimes, curves are more easily described as functions of x in terms of y. For example, when finding the area between the curves $4x + y^2 = 12$ and $x = y$.

Volumes of Solids:

- Given a solid, we like to first think about a *cross section* of the surface which is

- Disk Method:

- Washer Method: