Math 142 - Calculus II (Sections 11-12)
Sample Test 1 – February 3, 2005

1	(10 *pts*)
2	(30 *pts*)
3	(10 *pts*)
4	(15 *pts*)
5	(15 *pts*)
6	(10 *pts*)
7	(10 *pts*)

Name: ______________________________

Directions: No Calculators are allowed on Tests or Exams. To receive proper credit, you must show your work and *box* your final answer.

1. Compute the derivative of $F(x) := \int_{x^2}^{0} \ln(1+t)\, dt$

2. Determine each of the following integrals:

   (a) $\int (3-2x)^5\, dx$

   (b) $\int xe^{-x^2}\, dx$

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

3. (a) Express $x^{(x^2+1)}$ in terms of the ln and exp functions.

   (b) Differentiate $x^{(x^2+1)}$.

4. (a) Sketch a graph of the region bounded by the curves $y = x^2$ and $x = y - 2$.

   (b) Determine the area of the specified region.

5. Using the *Disk/Washer* method, determine the volume of revolution, about the x-axis, of the region bounded by the curves $y = x^2$ and $x = y - 2$.

6. Using the *Cylindrical Shell* method, determine the volume of revolution about the y-axis of the region in the first quadrant which is bounded by the curves $y = x^2$ and $x = y - 2$.

7. Determine the arclength of the curve given by the graph of $y = \frac{1}{3}\left(x^2+2\right)^{\frac{3}{2}}$ for $x = 0$ to $x = 1$.