

MAT 122 – 001

Spring 2008

Test Two

**Show all work. For problems 1, 2, 3, and 4 show all steps.**

1. Determine  $\int \frac{1+4x}{\sqrt{1+x+2x^2}} dx$ .

2. Determine  $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$ .

3. Determine  $\int_0^1 x^2 (1+2x^3)^5 dx$ .

4. Determine  $\int_0^{\pi/3} \frac{\sin x}{\cos^2 x} dx$ .

5. Set up a definite integral to find the area between the curves  $y = x^2 - 4x$  and  $y = 2x$ . You need not do the integration.

6. Set up a definite integral to find the volume generated when the region bounded by  $x = 1 + y^2$  and  $y = x - 3$  is generated about the  $y$ -axis. You need not do the integration.