Calculus II
Sample Exam 1

Do all ten problems. For maximum credit, show your work and justify your answers; answers alone will seldom receive full credit. If you show your work and if your answer is wrong, you may still receive partial credit. Do not use a calculator. You need not simplify answers. Each of the ten problems is worth 10 points.

1. Write a sum of 5 terms to approximate the integral $\int_{1}^{2} \frac{1}{x} \, dx$. DO NOT simplify or combine terms; leave your answer as a sum of 5 quantities.

2. Find the derivative of $f(x) = \int_{x^2}^{2} \frac{\tan^3 t}{t} \, dt$.

3. Find $\int \frac{\ln x}{x} \, dx$.

4. Find $\int \frac{16}{\sqrt{16 - x^2}} \, dx$.

5. Compute $\int_{0}^{\pi/2} \cos^2 x \, dx$.

6. Find $\int (x^2 + 2x - 1)e^x \, dx$.

7. Find $\int \tan x \sec^3 x \, dx$.

8. Find $\int \frac{1 + \sin x}{1 - \sin^2 x} \, dx$.

9. Find $\int \frac{-1}{(4 + x^2)(3/2)} \, dx$.

10. Find $\int \frac{4x - 2}{(x - 1)(x + 2)} \, dx$. 