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