Problem Set 6   Calculus 2   Due 7/27/04

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points. For full credit indicate clearly how you reached your answer. All work must be legible and submitted on clean paper without ragged edges.

1. Sketch pictures and approximate $\int_1^5 \ln x \, dx$ using a Riemann sum:

    a) with left-hand endpoints and 4 subintervals.

    b) with right-hand endpoints and 4 subintervals.

2. Sketch pictures and approximate $\int_1^5 \ln x \, dx$ using a Riemann sum:

    a) with left-hand endpoints and 10 subintervals.

    b) with right-hand endpoints and 10 subintervals.

3. Sketch pictures and approximate $\int_0^1 \cos\left(x^2\right) dx$ using a Riemann sum:

    a) with left-hand endpoints and 4 subintervals.

    b) with right-hand endpoints and 4 subintervals.

4. Sketch pictures and approximate $\int_0^1 \cos\left(x^2\right) dx$ using a Riemann sum:

    a) with left-hand endpoints and 10 subintervals.

    b) with right-hand endpoints and 10 subintervals.

5. What can you say about the error (difference between your approximations and the true value of the integrals) in problems 1-4? What features of the functions are important to these conclusions?