Project Based Math 112, Fall 2001
Using Error Bounds
§5.9 Activity 2

Part A

Consider the integral $\int_0^\pi \sin(x)dx$. Sketch the corresponding area.

Bound the error when approximating the area using the given rule and $n = 100$.

1. The Midpoint Rule

2. The Trapezoid Rule

3. Simpson's Rule

Part B

1. Is the approximation in A1 an overestimate or an underestimate?

2. Is the approximation in A2 an overestimate or an underestimate?

3. What condition on a function guarantees that the Midpoint Rule gives an overestimate?

4. What condition on a function guarantees that the Trapezoid Rule gives an overestimate?