MAT229 Quiz 06, Spring 2025

Name:

There are three problems (one on the back). You can leave answers exact, or use a calculator and decimals – up to you.

1. (5 pts) Use all five of our methods to estimate the integral

$$\int_1^3 x^2 dx$$

with $n = 2$ subintervals/rectangles. Show your work!

rule	*estimate*	*abs.error*
lrr		
rrr		
trap		
mid		
simp		

2. (2 pts) Which methods in part 1 are over-estimates and which are under-estimates? How do we know? (A picture would be welcome.)

3. (3 pts) We seek to use the trapezoidal and midpoint rules to compute the integral

$$\int_1^3 x^2 dx$$

to within .001 (one-thousandth) of the correct value. How many rectangles n must we use to assure that these rules satisfy our error bound?