Math 128a – Week Worksheet
GSI: Izak, (3/10/21)

4.3 Problems

Problem 1. *Approximate* $\int_0^{.5} \frac{2}{x-4} dx$ *using (a) trapezoidal rule (b) Simpson's rule (c) midpoint rule. Bound the error, and compare that to the actual error.*

Problem 2. *The Trapezoidal rule applied to* $\int_0^2 f(x)dx$ *gives the value* 4*, and Simpson's rule gives the value* 2*. What is* $f(1)$*?*

Problem 3. *Find the constants* c_0, c_1, x_1 *so that the quadrature formula* $\int_0^1 f(x)dx = c_0 f(0) + c_1 f(x_1)$ *has the highest possible degree of precision.*

4.4 Problems

Problem 4. *Determine the values of* n *and* h *required to approximate* $\int_0^2 e^{2x} \sin(3x)dx$ *to within* 10^{-4} *using (a) composite trapezoidal rule (b) composite Simpson's rule (c) composite midpoint rule.*

4.5 Problems

Problem 5. *Use Roomberg integration to compute* $R_{3,3}$ *for* $\int_1^{1.5} x^2 \ln(x)dx$