

ESO 208A; ESO 218

Computational methods in engineering

Assignment # 7

Due date: October 17, 2013

1. Integrate the following function

$$\int_1^2 (x+2)(x-3)(x+1)dx$$

- a) Use analytical method.
 - b) Use the trapezoidal method with $n = 1$.
 - c) Use the trapezoidal method with $n = 2$.
 - d) Use (b) and (c) and Richardson's extrapolation formula.
 - e) Use two point Gauss-Legendre formula.
 - f) Calculate error for steps (b) to (e).
2. Derive the three point Gauss-Legendre formula.
 3. Use Richardson's extrapolation method to find an expression for a more accurate first order derivative using two other first order derivatives with first order accuracies.