

ME-500: Reference Material

August 31, 2015

Part I

Dictionary of Terms

1 Define Words

1.1 Lecture 1

1. Fundamental Theorem of Continuum Mechanics
2. Divergence Theorem
3. Unit Normal Vector
4. Heaviside Function
5. Dirac-Delta Function
6. Ramp Function
7. Strong Form of an Equation
8. Weak Form on an Equation
9. Continuity
10. Mathematical Symbols
 - (a) $:=$ is defined as “such that” and “equals”
 - (b) \forall $:=$ for all, arbitrary
 - (c) \in $:=$ subset of, within
 - (d) \implies $:=$ implies

1.2 Lecture 2

1. Numerical Quadrature
2. Taylor Series
3. Polynomial of order “p”
4. Quadrature Points
5. Quadrature Weights
 - (a) Newton-Cotes

- (b) Gauss
- 6. General Trapezoidal Rule
- 7. Error
- 8. Upper Bound of Error
- 9. Mesh Density
- 10. Rate of Convergence