

ME 5228

Homework: Due December 2, 2003

1. Complete part iii of the project. To compare your results with your solution from part I, please graph. Be sure to label the axis of your graph. Check all of the units. Turn in the project part iii as a separate document.

2. For a rectangle with coordinates as shown in figure 8.5 (1:(1,1), 2:(4.5,1), 3: (4.5, 3.5) and 4: (1,3.5)), assume a linear mapping for the natural coordinates and linear mapping of the solution.

a. find the Jacobian matrix

b. evaluate the matrix $\iint [B]^T [B] dx dy$ over the element

c. evaluate the force vector $\iint f_o [N]^T dx dy$

3. For a triangle with coordinates as shown in figure 8.5 a (1: (1,1), 2: (4, 1.5), 3: (2.5, 4)), assume a linear mapping for the natural coordinates and linear mapping of the solution.

a. find the Jacobian matrix

b. evaluate the matrix $\iint [B]^T [B] dx dy$ over the element

c. evaluate the force vector $\iint f_o [N]^T dx dy$

4. Problem 9.4 (use our r,s, and t coordinates instead of L_1 , L_2 , and L_3).