

2.092/2.093
FINITE ELEMENT ANALYSIS OF SOLIDS AND FLUIDS I
FALL 2009

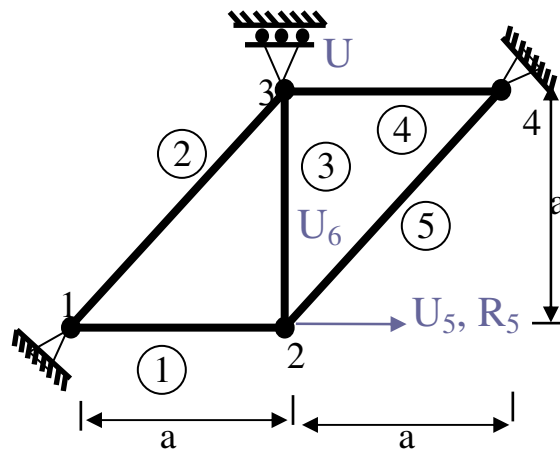
Homework 4

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Assigned: Session 9
Due: Session 10

Problem 1 (30 points):

Consider Problem 1 of HW #1 with $E = 1.0 \times 10^9 \text{ N/m}^2$, $A = 0.0025 \text{ m}^2$, and $a = 2 \text{ m}$. Let the load $R_5 = 300 \text{ kN}$. Use ADINA for the following analyses:



- a) Perform a linear analysis, and compare your solution with the HW # 1 solution.
- b) Perform a nonlinear large displacement analysis.
- c) Compare the results obtained in a) and b) regarding the nodal point displacements, element forces and reactions.

d) Show explicitly for a) and b) that element 5 and joint 3 are in equilibrium. Show that the complete structure is in equilibrium for a) and b).

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