2.093
Computer Methods in Dynamics

FALL 2002

Homework 4

Problem 1 (10 points):

Exercise 5.16, textbook, K.J. Bathe. *Finite Element Procedures*. Prentice Hall Inc., Englewood Cliffs, NJ, 1996. (Page 393)

Problem 2 (20 points):

In a linear elastic material and static analysis ($E = 2 \times 10^5$ MPa, $\nu = 0.3$, p=1000) consider the circular plate shown below.
   a) Analyze the plate using an analytical (approximate) solution.
       Refer to *Theory of plates and shells* by S. P. Timoshenko (page 55)
   b) Analyze the plate using ADINA with
        -   4 node elements
        -   9 node elements

• With the 4- node element use meshes of 4×12 and 8×24 elements.
• With the 9- node element use meshes of 4×12 and 8×24 elements.

Compare your ADINA results with the analytical solution in a)

P(pressure) = Const.

4cm

Fixed

12 cm

Fixed

C_L