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2.094 Finite Element Analysis of Solids and Fluids  
Spring 2008

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**2.094**  
**FINITE ELEMENT ANALYSIS OF SOLIDS AND FLUIDS**  
**SPRING 2008**

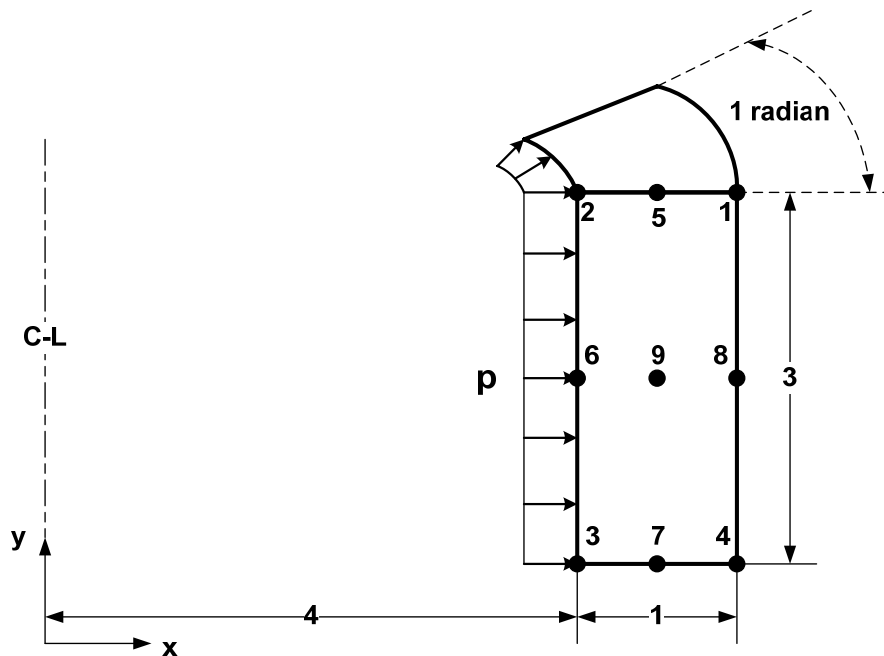
**Quiz #1**

Instructor: Prof. K. J. Bathe

Date: 04/01/2008

**Problem 1 (10 points)**

Calculate the nodal point forces corresponding to the surface loading on the axisymmetric element shown (consider 1 radian). However, do not perform the final integration.



**Problem 2 (10 points)**

Consider the 5/1 u/p plane strain element shown.

- (a) Evaluate all interpolation functions for displacements and pressure.
- (b) Evaluate the columns in the strain-displacement matrices  $\underline{B}_D$  and  $\underline{B}_V$  corresponding to the displacement  $u_1$  shown in the figure.

