

2.094

FINITE ELEMENT ANALYSIS OF SOLIDS AND FLUIDS

SPRING 2008

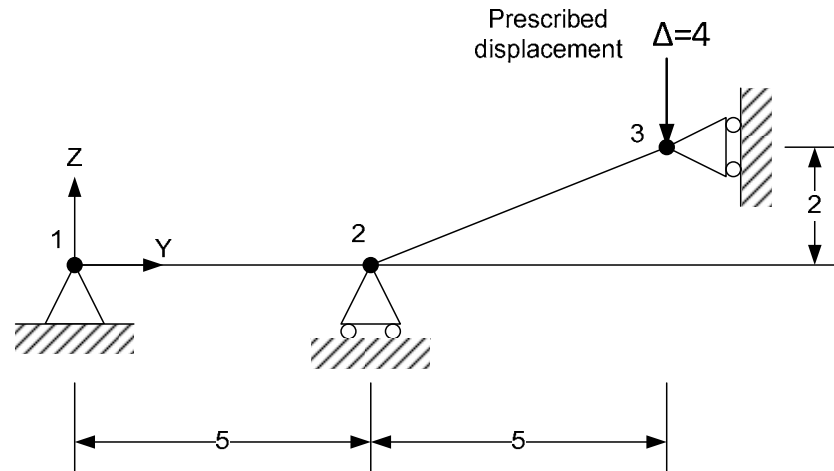
Demo 4

Instructor: Prof. K. J. Bathe

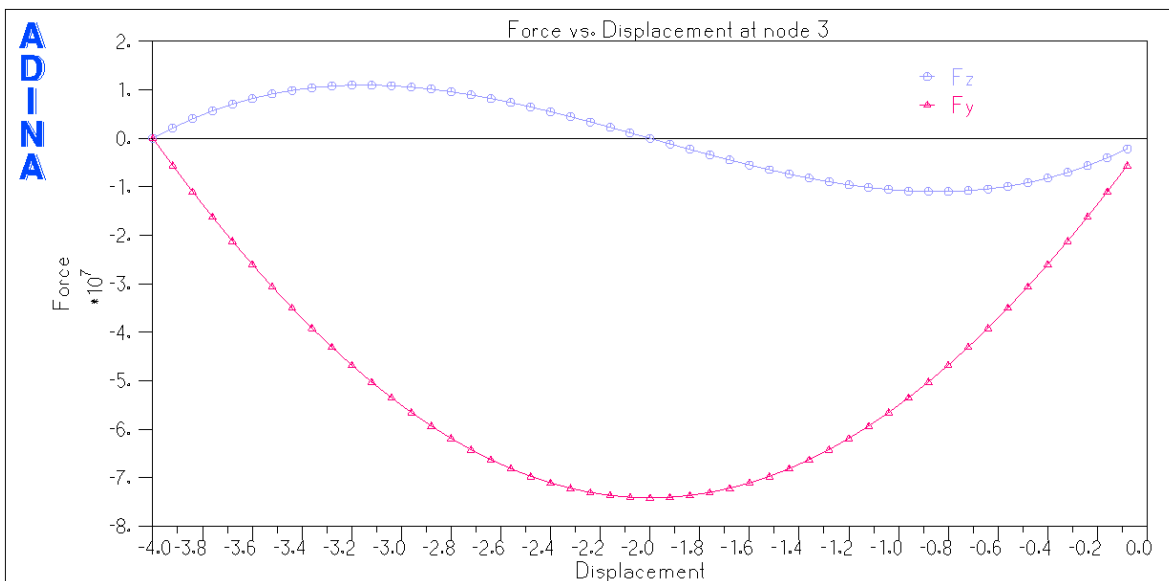
Date:

04/08/2008

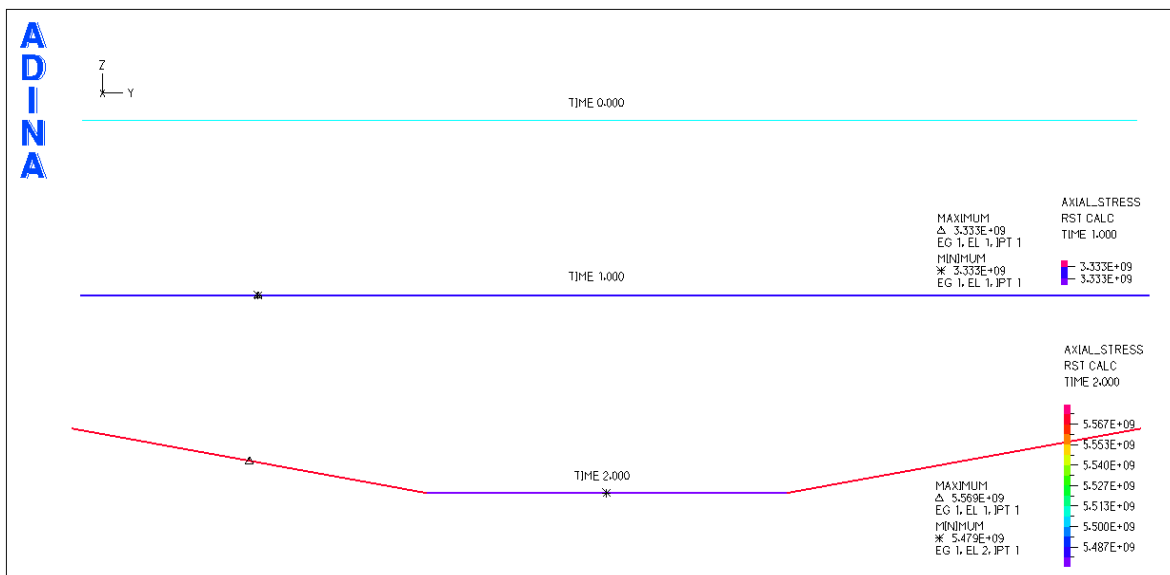
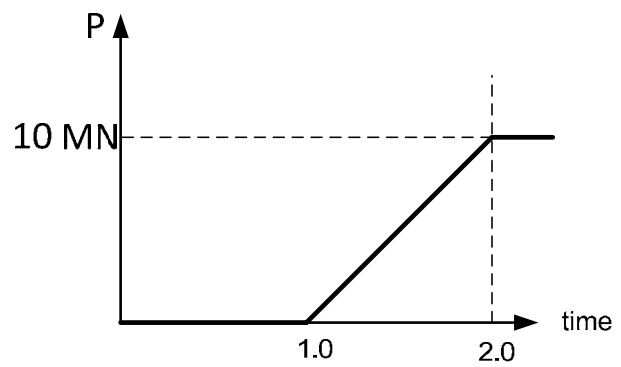
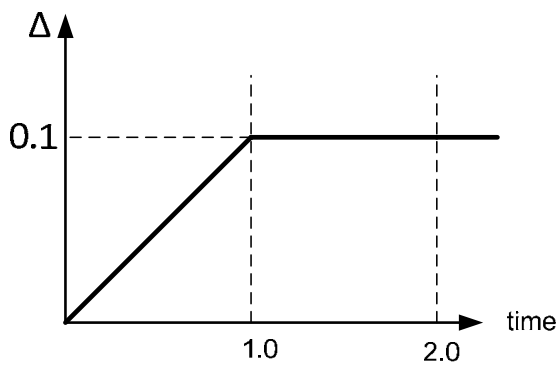
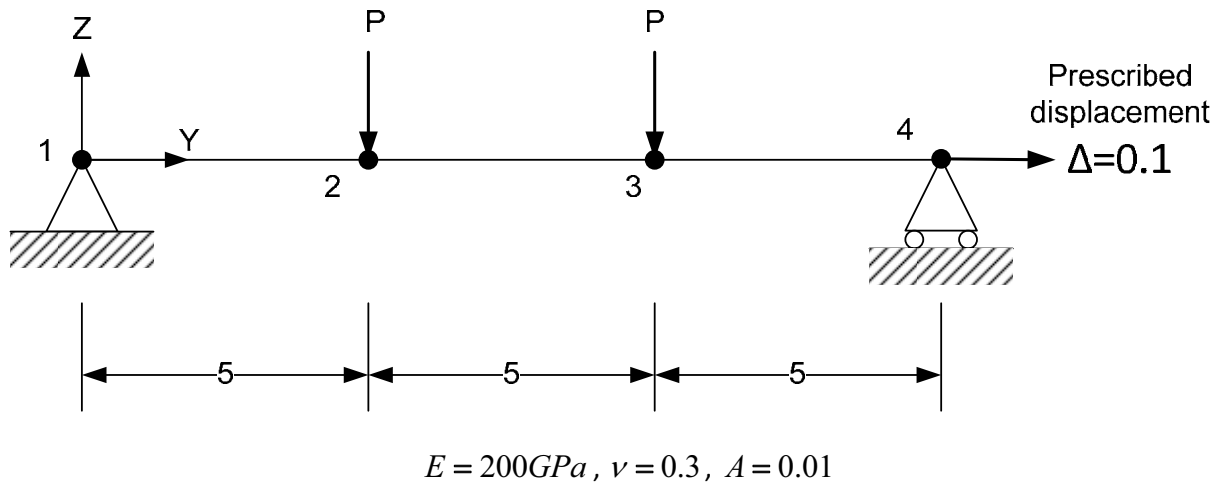
1. The snap-action toggle (exercise 6.33, textbook, p558)



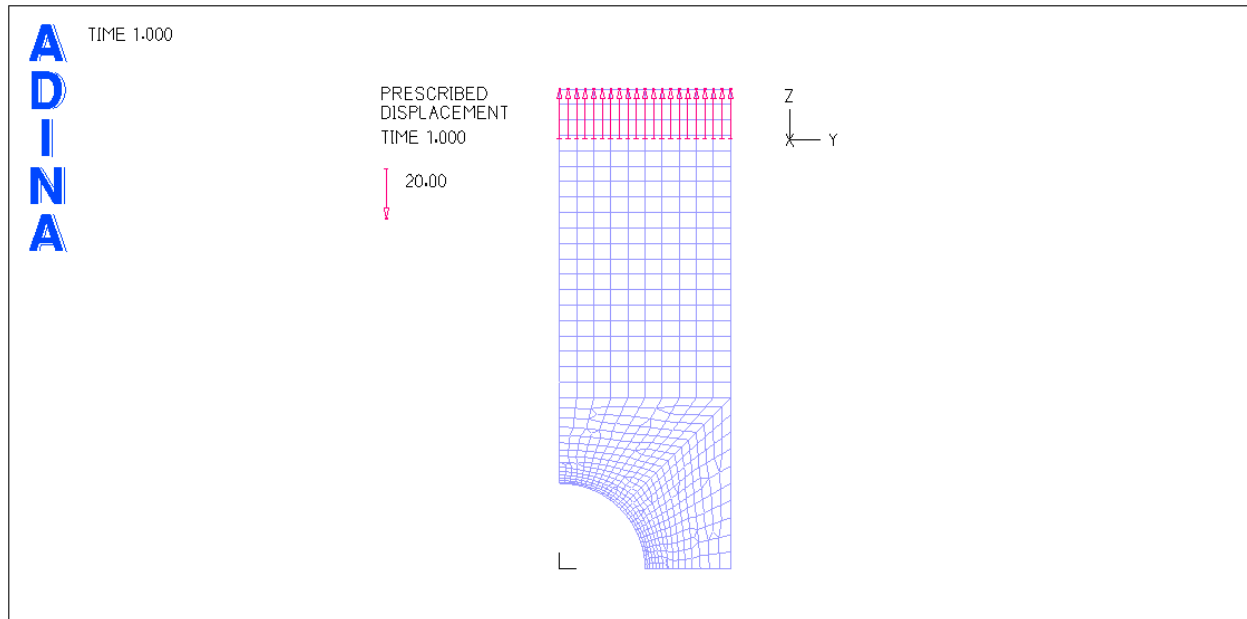
$$E = 200\text{GPa}, \nu = 0.3, A = 0.01$$



2. Pre-strained truss



3. Plate with a hole



Height = 28, Width = 10, Radius = 5.

Plane strain.

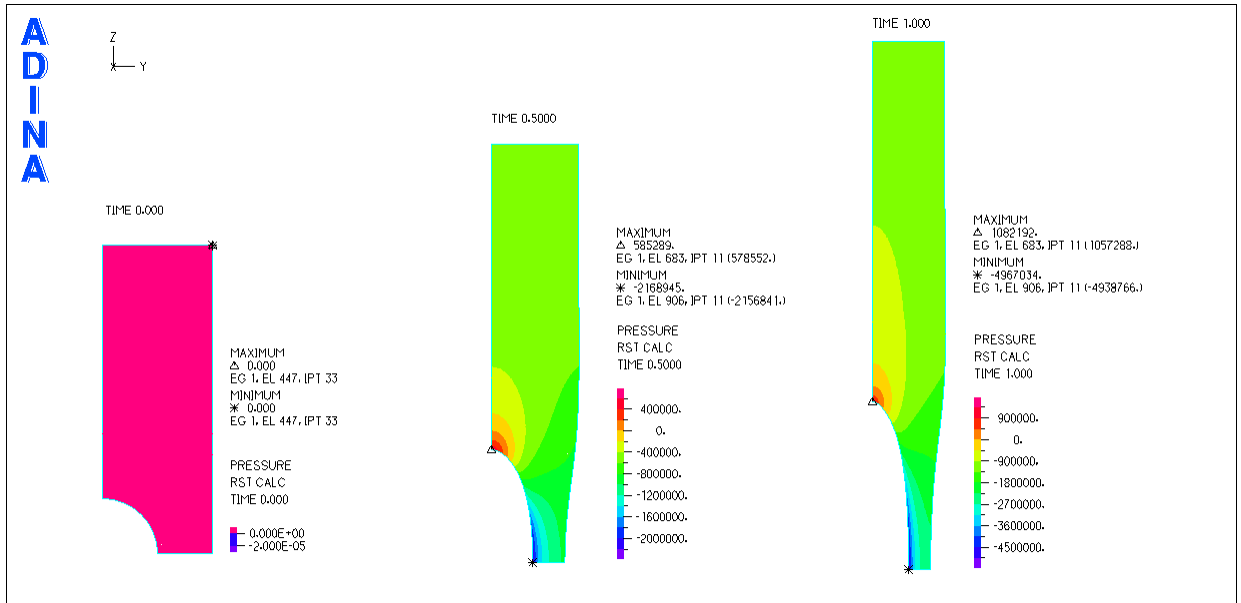
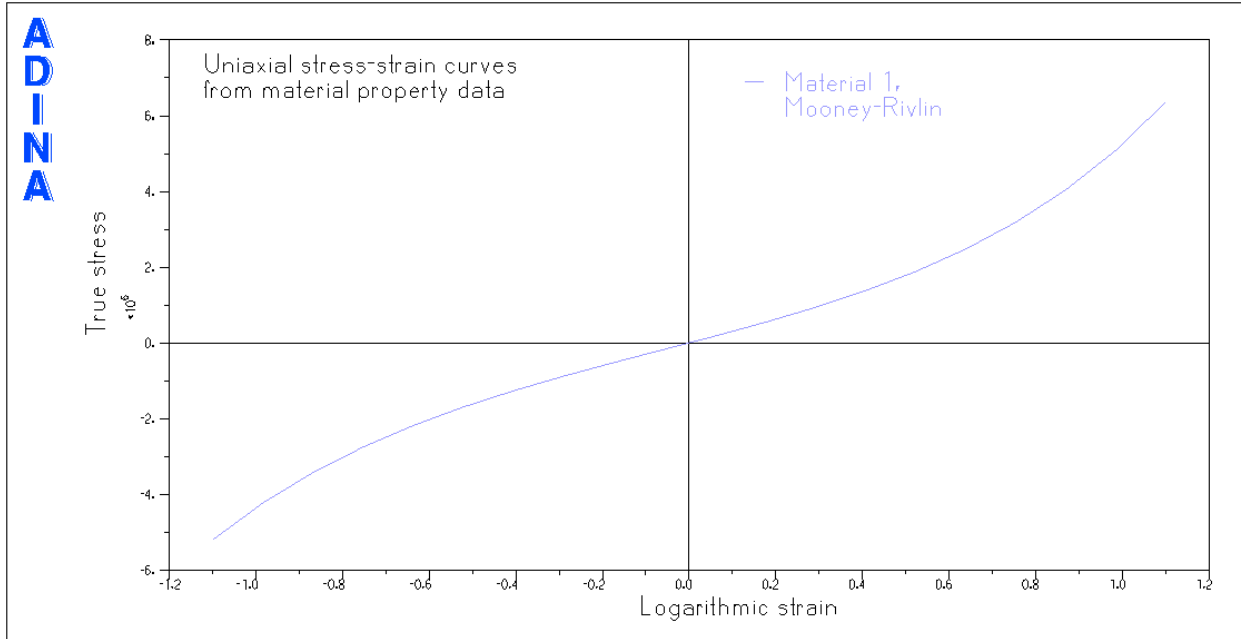
9/3 u/p element.

Prescribed displacement on the top surface.

(1) Rubber elasticity

Mooney-Rivlin: C1 = 0.3 MPa, C2 = 0.2MPa.

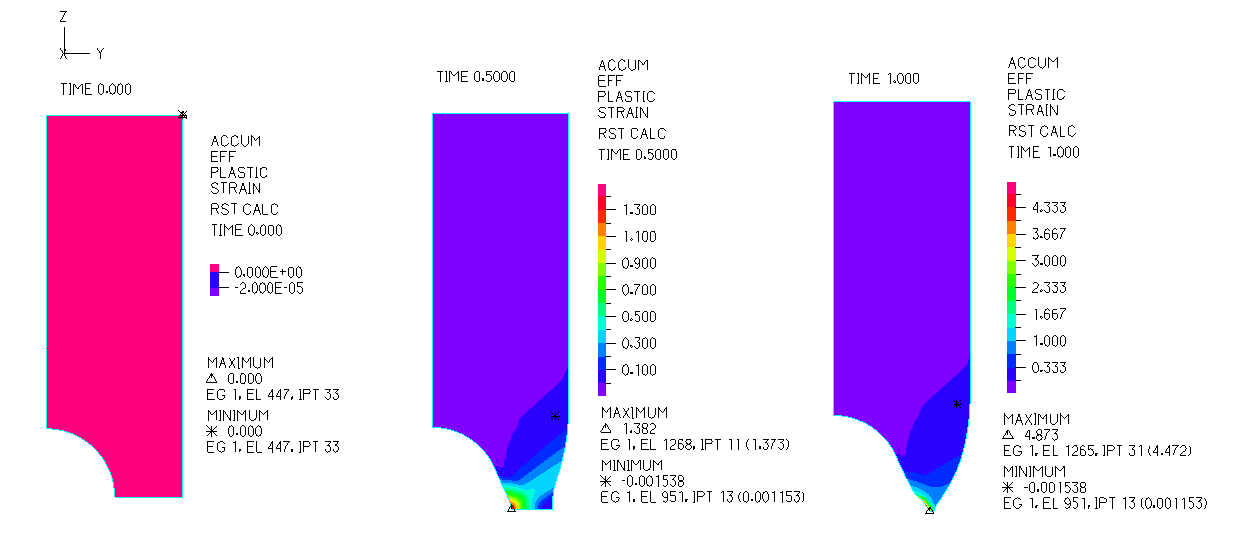
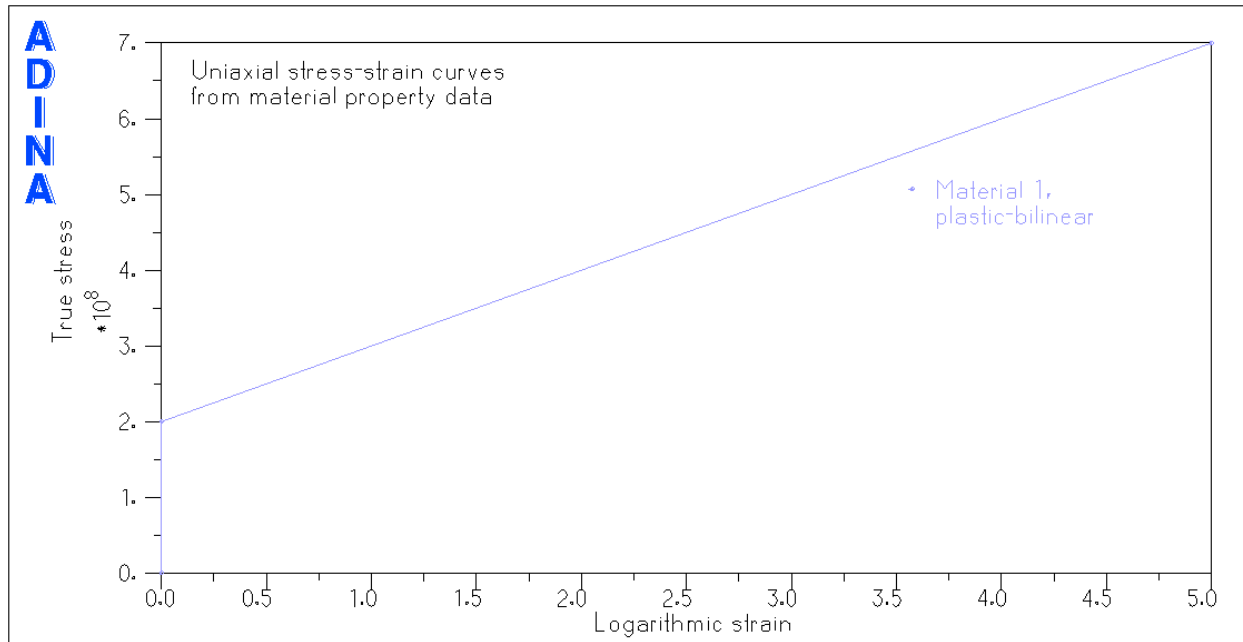
Prescribed displacement = 20.0



(2) Steel, elasto-plasticity.

Prescribed displacement = 2.0

$$E = 200\text{GPa}, \sigma_Y = 200\text{MPa}, E_T = 100\text{MPa}$$



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