



University of Jeddah
Faculty of Engineering

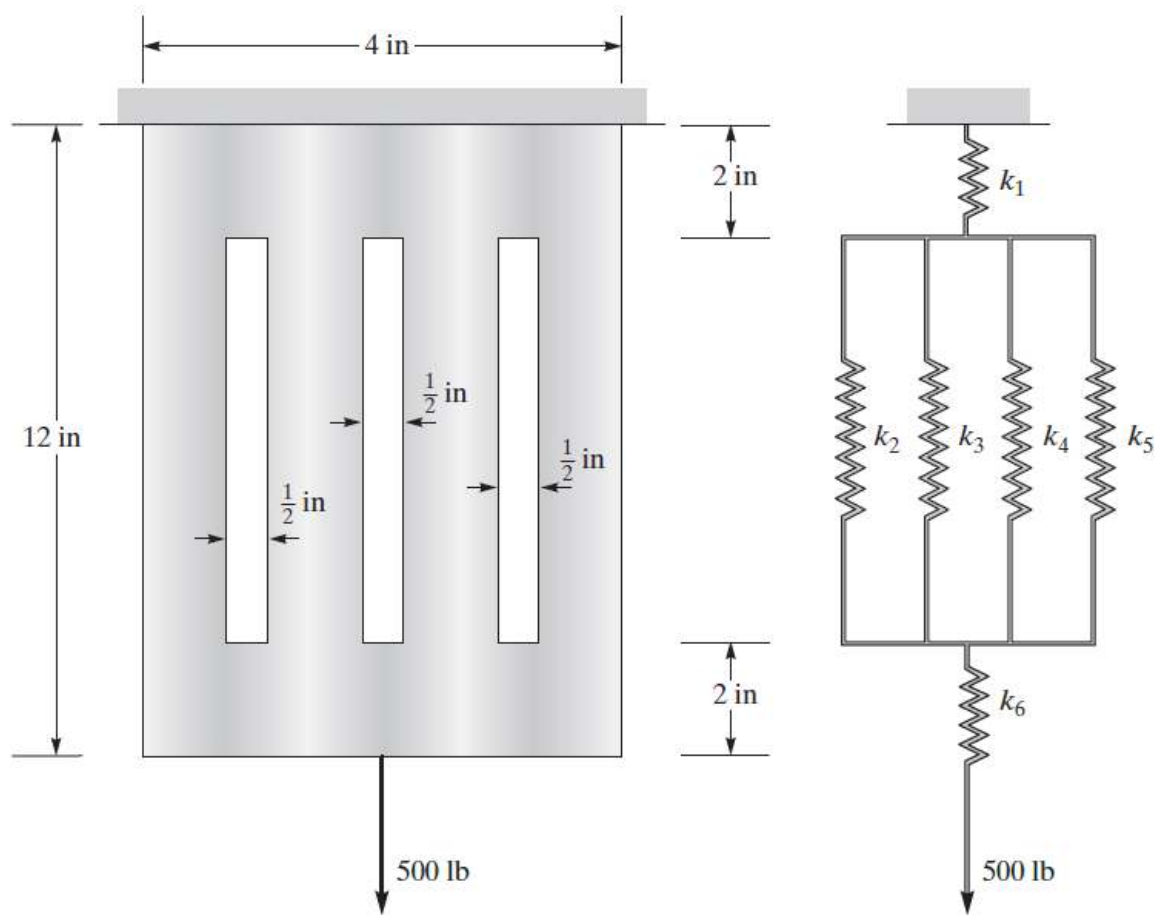
ENME 421 – Finite Element Methods

Project 1

Problem 1

A thin steel plate with the profile shown in the accompanying figure is subjected to an axial load. Approximate the deflection and the average normal stresses along the plate using the model shown in the figure. The plate has a thickness of 0.125 in and a modulus of elasticity

$E = 28 \times 10^3$ ksi. Use Abaqus and Solidworks software to solve the problem.



Problem 2

Consider a plate with a variable cross section supporting a load of 1500 lb, as shown in the accompanying figure.

- 1- Using direct formulation, determine the deflection of the bar at locations $y = 2.5$ in, $y = 7.5$ in, and $y = 10$ in. The plate is made of a material with a modulus of elasticity $E = 10.6 \times 10^3$ ksi.
- 2- Solve the problem using Abaqus software and compare the exact and numerical results.

