

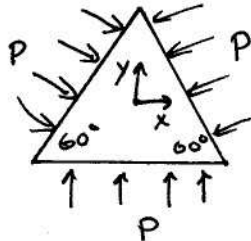
University of Massachusetts - Amherst  
 Department of Civil & Environmental Engineering  
 CEE 630: Advanced Solid Mechanics (Fall 2009)

**Homework #1: Due September 17**

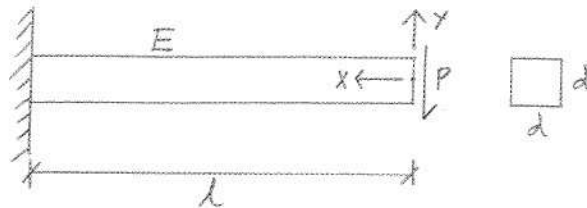
From Ugural and Fenster

**Problem 1:** 1.17

**Problem 2:** Consider the triangular body shown below that is subject to a state of hydrostatic pressure. Calculate the traction boundary conditions for the three boundary surfaces, giving components in the  $(x, y)$  coordinate system.



**Problem 3:** A cantilever beam, shown below, of length  $l$  with square cross section of dimension  $d$ , and made of a material with elastic modulus  $E$ , is loaded at its free end by a point load  $P$ . You may treat this as a two dimensional problem in the  $(x, y)$  plane. (a) Compute the two dimensional state of stress at an arbitrary point  $(x, y)$  considering bending and shear stresses, (b) Compute the traction at the point  $x = l/2, y = 0$  on a plane whose normal points in the  $[1, -1]$  direction, down and to the left in the figure.



**Problem 4:** How many hours did you spend on this assignment?