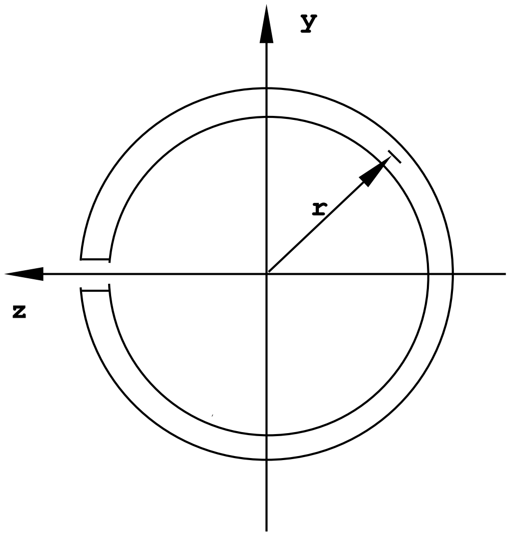
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF OCEAN ENGINEERING AND CIVIL AND ENVIRONMENTAL ENGINEERING
13.10J/1.573J Introduction to Structural Mechanics
Fall 1999
Problem Set 8

Assigned : October 28, 1999
Due : November 4, 1999

1. Problems from Chapter 11 of the course textbook.
   (a) 11.58
   (b) 11.62
2. Find the location of the shear center for the slit, thin-walled tube of radius r and thickness t.

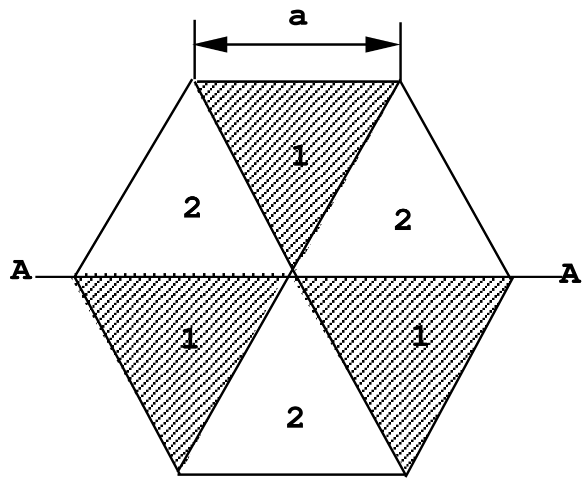


3. A prismatic rod of regular hexagonal cross-section is made up of six equilateral triangular segments as shown in the following figure. The segments are alternately Redwood ($E_1 = 1.2 \times 10^6 psi$) and soft White Pine ($E_2 = 1.0 \times 10^6 psi$) glued together to form a solid section. The dimension $a = 1in.$ If the bar is subjected to pure bending around line AA,

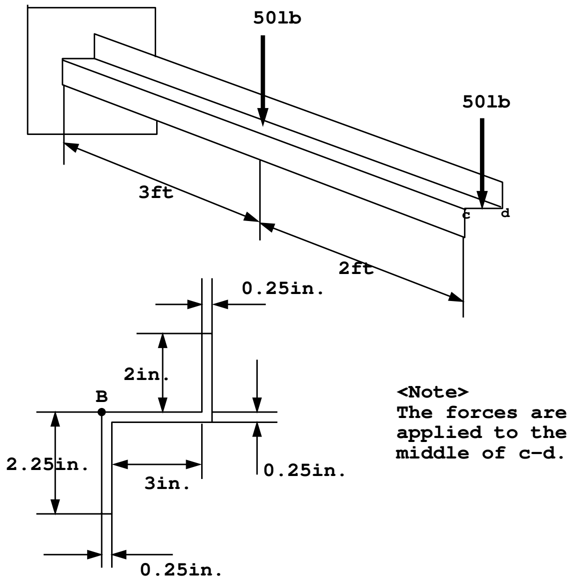
   (a) Find principal axes of EI.

   (b) Find $EI_{\xi\xi}$, $EI_{\eta\eta}$.

   (c) Find the maximum bending stress σ assuming that $M = 1000 in.-lb.$



4. The cantilevered beam is made from the Z section having the cross-section shown. If it supports the two loadings, determine the maximum bending stress in the beam at point B.



Problem sets are available also in the course homepage.