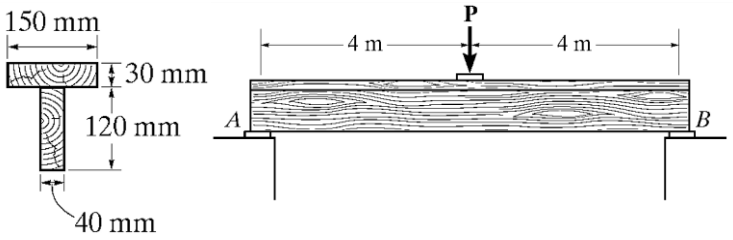
1) GIVEN: Wood beam loaded as shown. P = 2.5 kN



REQ'D: (a) Location of maximum horizontal shearing stress in beam depth.

(b) Calculate the maximum horizontal shearing stress. (show A' and $\bar{y}$)

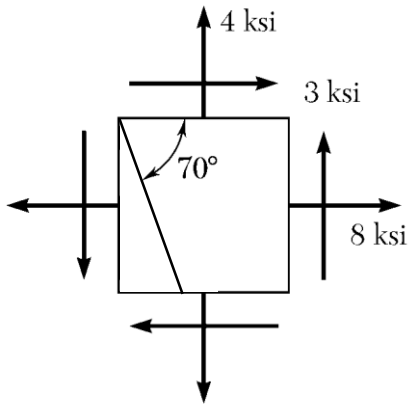
2) GIVEN: 30 gallon steel air receiver for the compressor
I'm going to build one of these days.
Assume hemispherical ends.
P = 200 psi t = 3/16 in d_{inner} = 14 in
E = 30×10^{-6} psi ν = 0.30

REQ'D: (a) Determine the normal stresses in the thikness of the cylindrical part of the tank. (σ_H & σ_L)
Draw a stress element.

(b) Determine the normal stress in the thickness of the 'spherical' end caps.

(c) What is the largest stress in the welds?

3) GIVEN: Element with the given state of stress.
REQ'D: (a) Normal and shearing streses on inclinde plane shown.



(b) Compute principal stresses and angles.
Show on principle stress element.

(c) Compute maximum shear stress and angle, and average normal stress.
Show on maximum shear stress element.