HW - Ch 4

Notice: Please, show your steps and reasoning. Don’t jump into the conclusion. Otherwise there is no choice except giving a penalty. This is the statement on your checklist on which you sign Every Time!

Pb 4.1
- Drawing the stress element. 
  ![Stress Element Diagram]
  
  Don’t forget red arrows! Because the element must be in the equilibrium state.

- Mohr’s circle should be 3-D
  
  Even though they have “some” value in 2-D stress state, the problem is specifying 3-D stress configuration.

  At least, you have to mention its center & radius. Make it more clear!

Pb 4.8
- This problem is containing a distributed load. Don’t treat it as a concentrated load.

- When you use the formula in appendix in the textbook, the deflection $s = 0.003$ m. It is same when you derived the eq. using singularity functions.

- Don’t be confused with the moment of inertia of area. The right thing with the moment of inertia of mass is $I = \frac{r^4}{64} (\pi R^2 - 10^4)$, not something with the mass!
Pb 4.10

You have to state some reason why \( \sigma_{max} = \frac{C}{I} \) is the largest principal stress.

Pb 4.42

Most students calculated \( \sigma_x, \sigma_y, \tau \), but this is not the end. What is \( \sigma_1, \sigma_2, \sigma_3 \)? (principal stresses)

- There is principal shear stress! (p. 148)

Pb 4.46

- Don't forget stress concentration factor, but be careful!

    Problem is stating that there are only bending & torsion stress concentration. When you calculate the shear due to transverse loading at B, that is just \( \tau = \frac{V}{A} \)

    but \( \tau = (2.5) \frac{V}{A} \). Not \( \tau = \frac{V}{A} \).

- At point B, look that carefully the directions due to torsion & transverse loading is opposite.

    \[ \tau_{xy} = \tau_{max} - \tau_{max} \]