Text problems: 5.56, 5.57, 5.58

Study problem: 5.49 - You don’t have to do this, but it’s good for studying.

Non-text problem:

1. Find the shear stresses in the circular and square members in figure 1.

2. For 20 points bonus on this homework, demonstrate using a sensitivity (derivative) analysis, that if you wanted to decrease the shear stress in the rectangular portion of the shaft, you should actually decrease the width and height, not increase them, as logic might suggest. This point illustrates that there can be fundamental differences between the behavior of determinate and indeterminate structures.

3. For another 15 points bonus, plot the shear stress and shear stress sensitivity in the circular and rectangular sections of the shaft with radius and width, in 3-d using Matlab.