CVEN 305 Honors - Homework #1 Supplemental Problems

1) **For Problem 1,** develop an Excel spreadsheet that can be used to calculate the normal stress in a solid or hollow circular shaft with a given outer diameter (D), inner diameter (d), and applied load (P). For instances where the shaft is solid simply set the inner diameter to zero. (a) Plot the normal stress as a function of the inner diameter from zero to 4 in. when the load P = 660 kips and (b) determine the maximum dimension that the inner diameter can be when the maximum allowable normal stress is 50 KSI. Solve problem 1 using your spreadsheet to check your calculations.

2) **For Problem 7,** Develop a computer program to calculate the normal stress and shearing stress that acts on the cross-section shown for given dimensions a and b, angle α, and load P. Plot the shearing stress and normal stress for α ranging from 90 to 85 degrees for the following values:

   a. P = 2.5 kips; a = 18 in.; b = 18 in.
   b. P = 435 lb; a = 5 in.; b = 2.5 in.

   You may verify the accuracy of your program by solving Problem 7 on McGraw-Hill Connect.