Homework Problem H34.B

Given: Circular cross-sectioned shafts (1) and (2) are coupled through a pair of meshing gears B and C, where $r_B > r_C$. End D of shaft (2) is connected to a fixed wall, whereas a torque of T is applied to end A of shaft (1). Both shafts have solid cross sections with a diameter of d.

Find: For this problem, determine the maximum shear stress in the system. In which shaft does this maximum shear stress occur, and where on the cross section does it occur?

Express your answers in terms of the parameters defined in the figure.