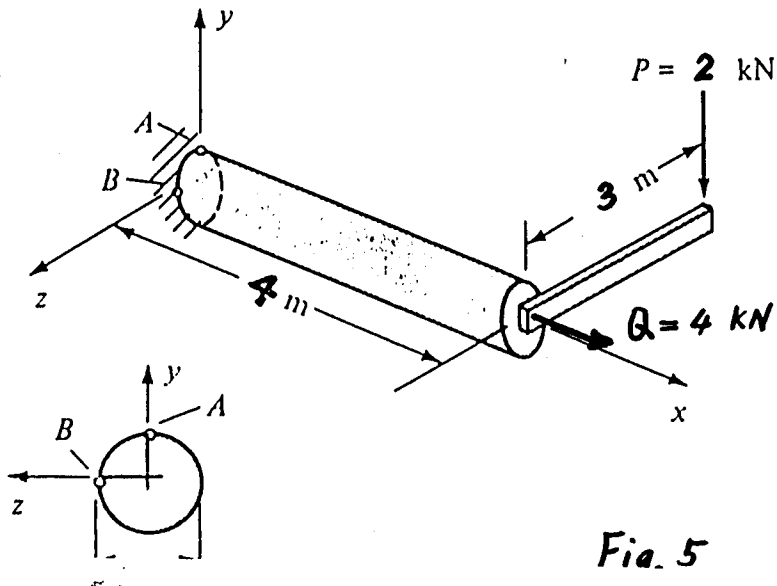5. A solid circular shaft is subjected to combined bending, torsion, and axial force as illustrated in Fig.5.
   (a) Compute the state of stress at points A and B, respectively, if the diameter of shaft is 100 mm. (10%)
   (b) Compute the shaft diameter required according to the Tresca and von Mises failure theories. Assume σ_{yield} = 240 MPa and a factor of safety of 2.0 (14%)

Fig. 5

6. Compute the reactions at points A and B, and construct shear and moment diagrams for Fig.6. (16%)

Fig. 6

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