

本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

每題 20%

- For the lap joint in Fig. 1, determine the maximum safe load P which may be applied if the shearing stress in the rivets is limited to 60 MPa, the bearing stress in the plates to 110 MPa, and the average tensile stress in the plate to 140 MPa.
- As shown in Fig. 2, a rigid beam with negligible mass is pinned at one end and supported by two rods. The beam was initially horizontal before the load P was applied. Find the vertical movement of P if $P = 120$ kN.
- Sketch shear and moment diagrams for the beam shown in Fig. 3, computing the values at all change of loading points and the maximum shear and maximum moment.
- As shown in Fig. 4, a simply supported beam carries two symmetrically placed concentrated loads. Compute the maximum deflection δ and compare one-half this result with the midspan δ . Check your answer by letting $a = L/2$ and comparing it with the answer in a simply supported beam.
- Derive the Euler's formula for a column hinged at one end and built-in at the other in Fig. 5. (i.e. one pinned end and one fixed end)

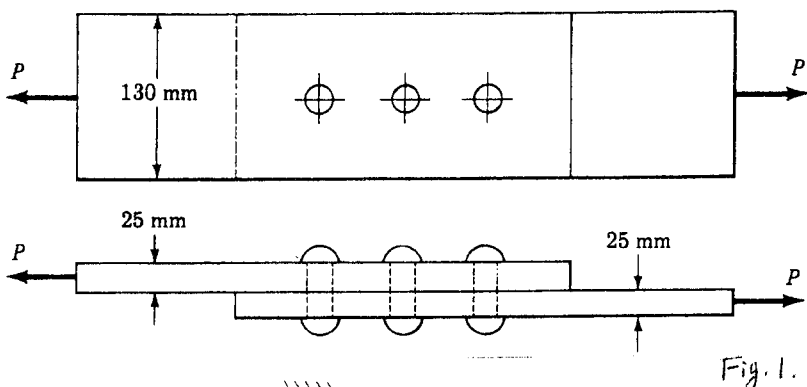


Fig. 1.

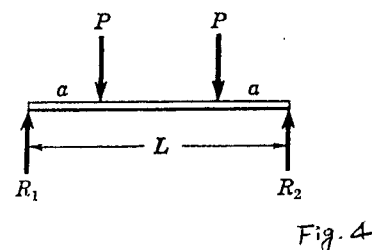


Fig. 4

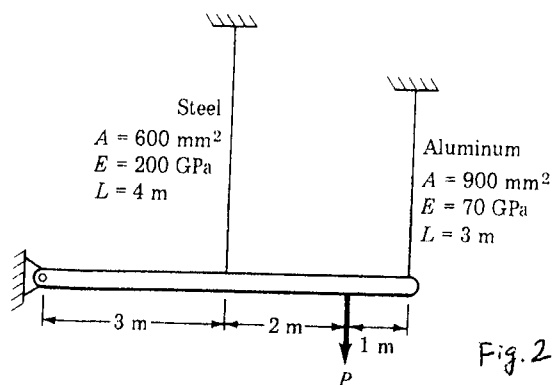


Fig. 2

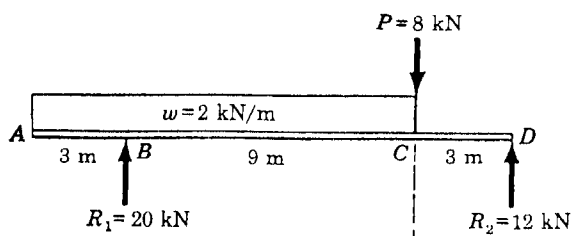


Fig. 3

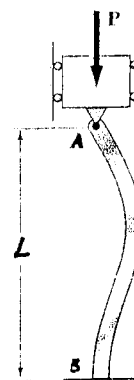


Fig. 5