Chapter 6 Homework Problems

Problem 6.1

Determine the internal forces and moments at cross section a-a in the C-clamp shown below. Assume the weight of the clamp itself is negligible. Show the final solution in a diagram.

Diagram

Description automatically generated

(Solution: N = 60 lbs T, V = 0, M = 300 in-lbs) drawn in diagram

Problem 6.2

A curved post on the back of a fishing trawler is used to pull in a full catch of fish. If there is a 7kN tension in the line, what are the expected internal forces and moments at the base of the post (cross section a-a)? Show the final solution in a diagram.

Diagram

Description automatically generated

(Solution: N = 5.36 kN C, V = 4.50 kN, M = 34.08 kNm) drawn in diagram

Problem 6.3

Draw the Axial Force Diagram for the column shown below.

Diagram

Description automatically generated

Problem 6.4

Draw the Torsion Diagram for the shaft shown below.

Diagram

Description automatically generated

Problem 6.5

Draw the shear diagram and the moment diagram for the beam shown below.

Diagram

Description automatically generated

Problem 6.6

Draw the shear diagram and the moment diagram for the beam shown below.

Diagram

Description automatically generated