

Chapter 3

Torsion of solid sections

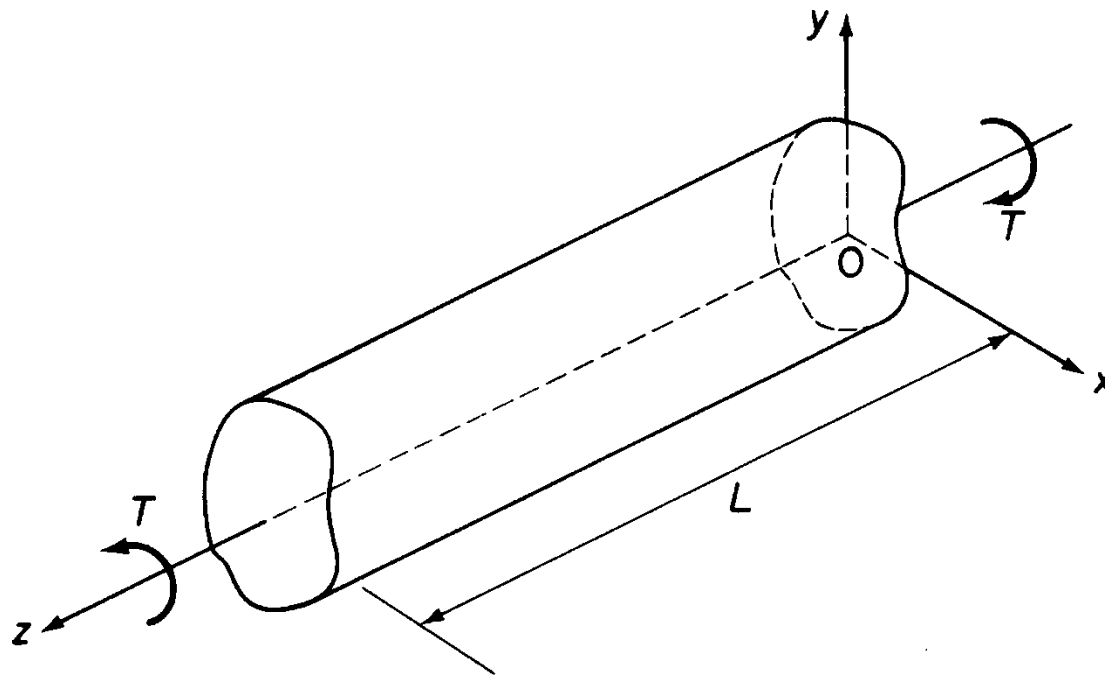


FIGURE 3.1 Torsion of a Bar of Uniform, Arbitrary Cross-section

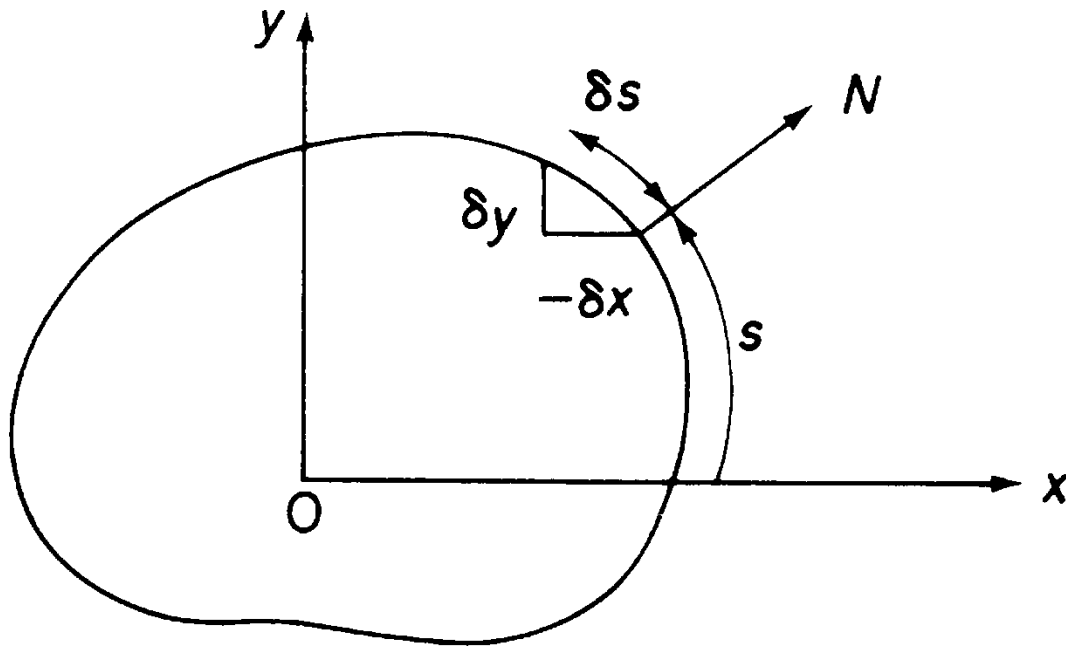


FIGURE 3.2 Formation of the Direction Cosines l and m of the Normal to the Surface of the Bar

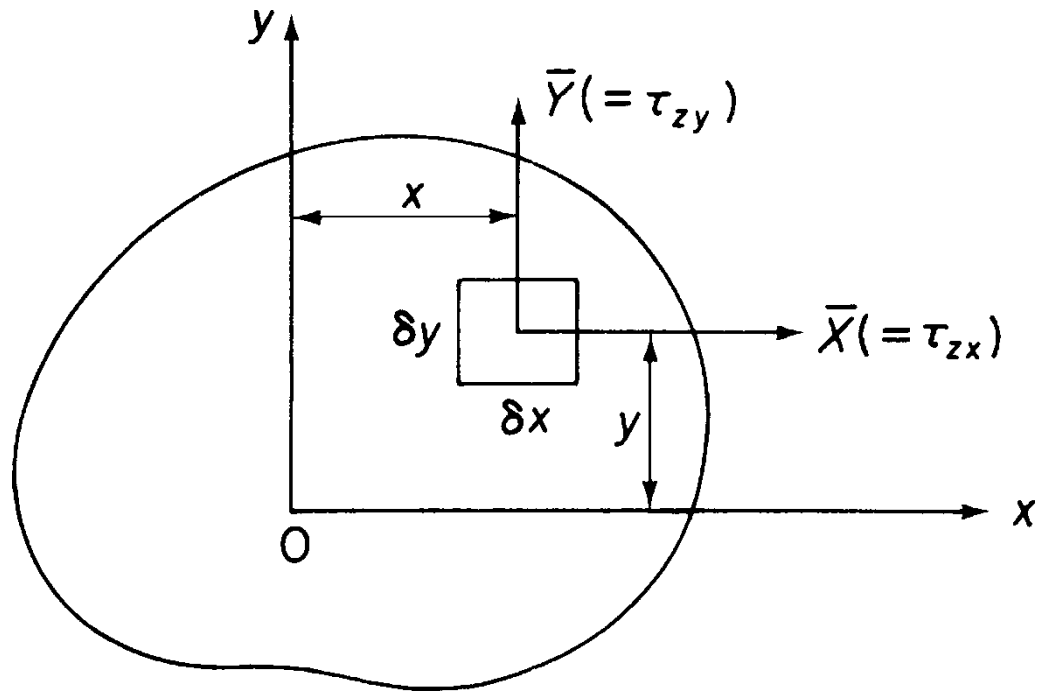


FIGURE 3.3 Derivation of Torque on Cross-section of Bar

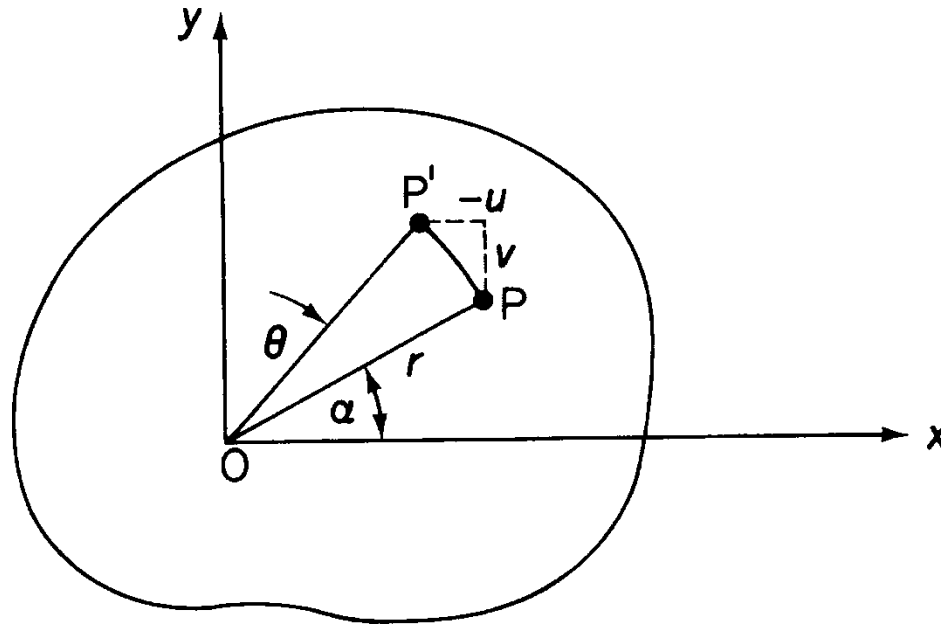


FIGURE 3.4 Rigid Body Displacement in the Cross-section of the Bar

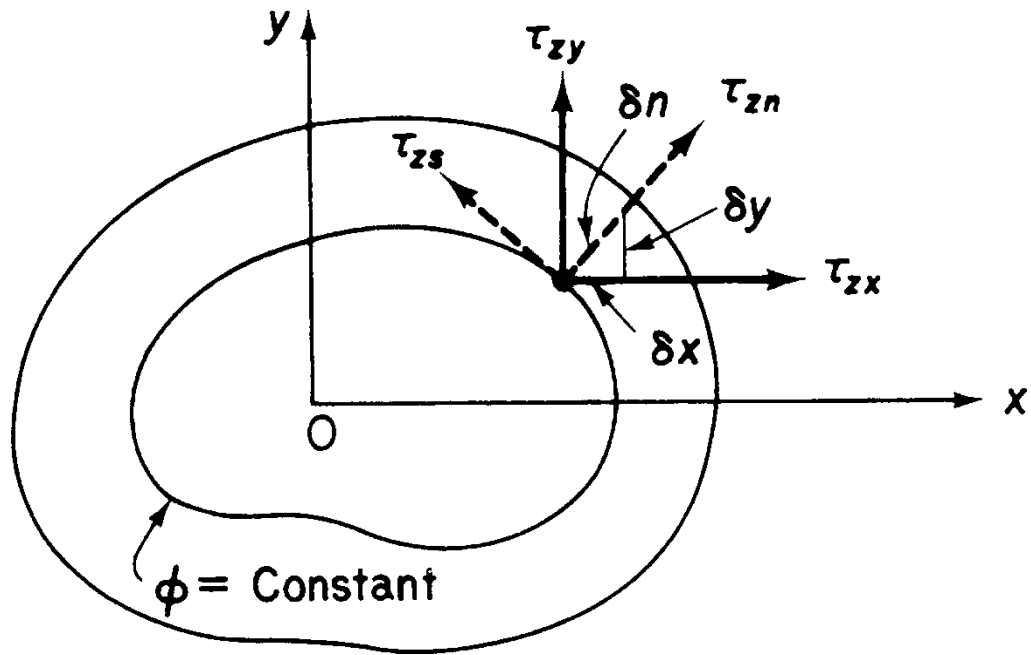


FIGURE 3.5 Lines of Shear Stress

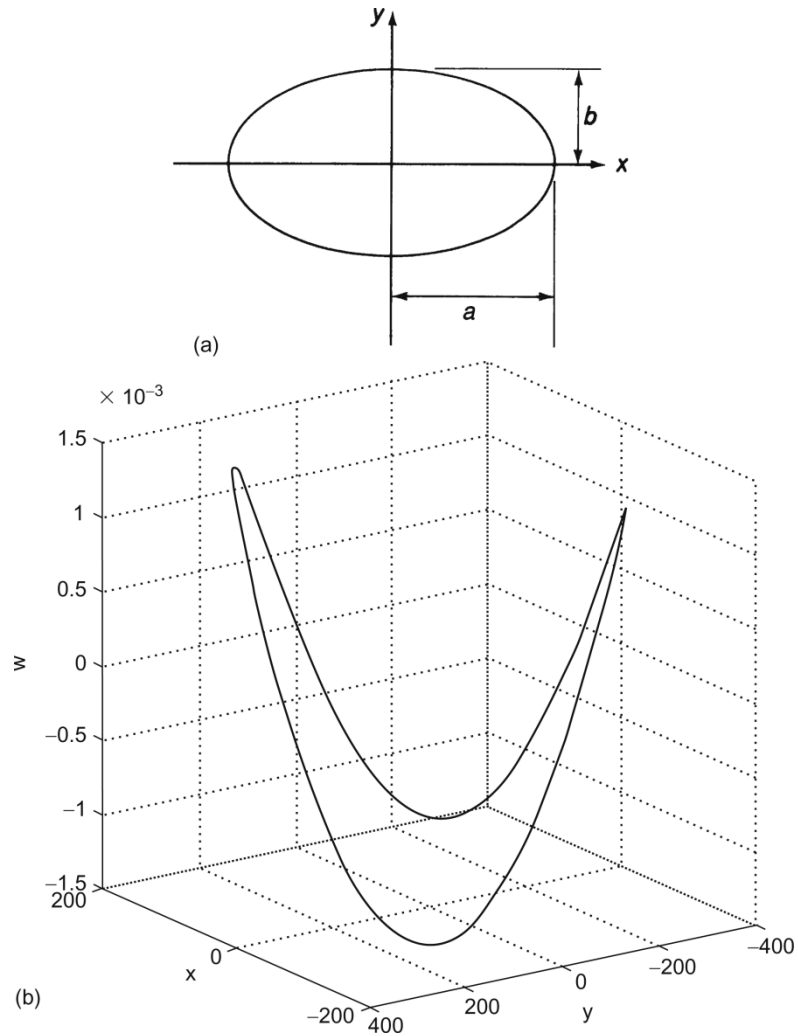


FIGURE 3.6 (a) Torsion of a Bar of Elliptical Cross-section; (b) (MATLAB) Warping Displacement Distribution

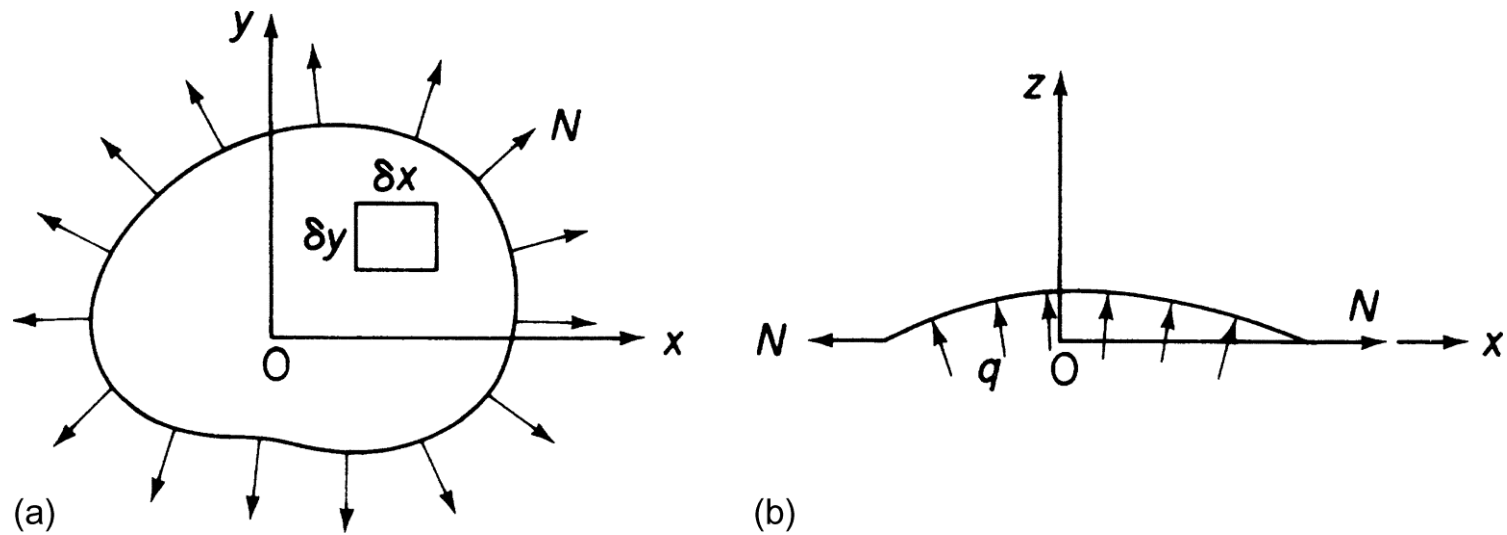


FIGURE 3.7 Membrane Analogy: (a) In-plane and (b) Transverse Loading

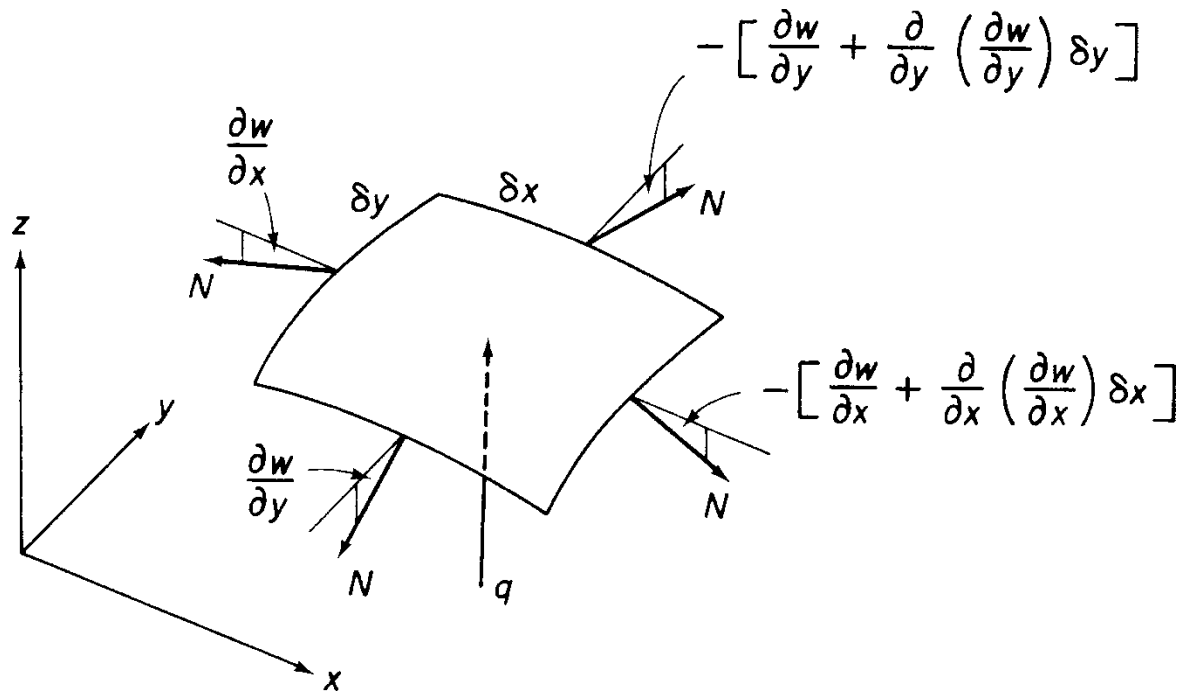


FIGURE 3.8 Equilibrium of Element of Membrane

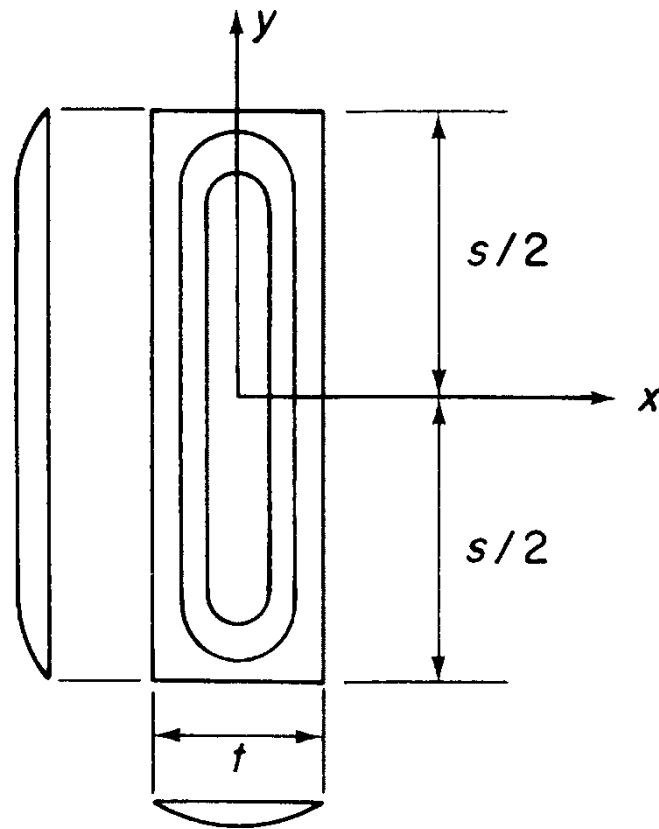


FIGURE 3.9 Torsion of a Narrow Rectangular Strip

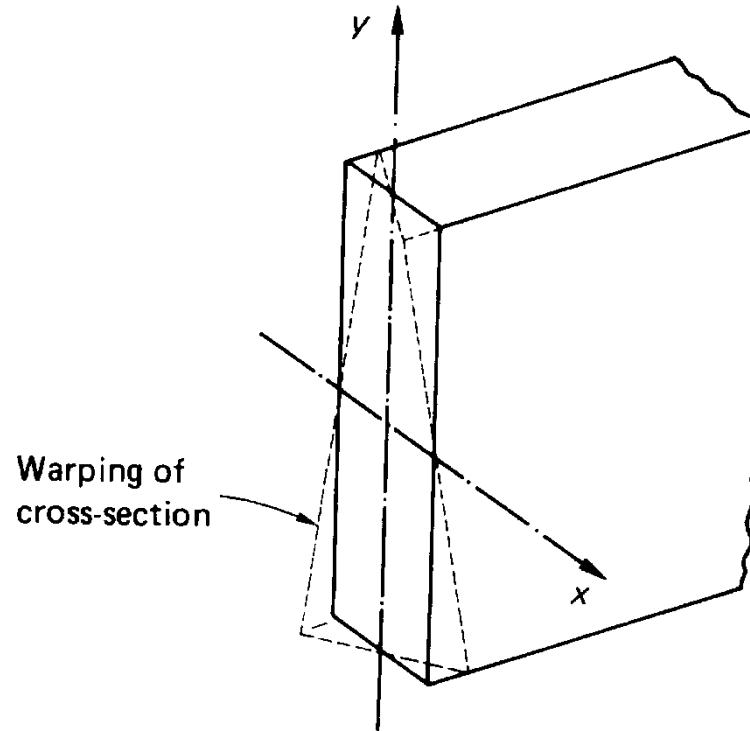


FIGURE 3.10 Warping of a Thin Rectangular Strip

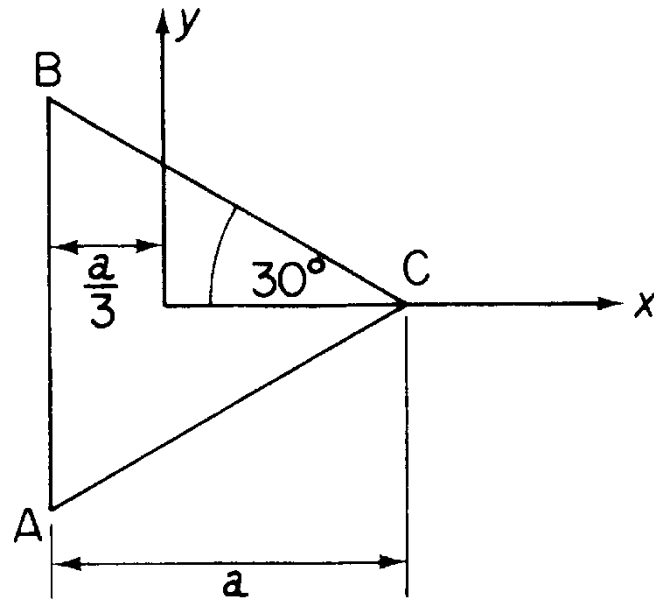


FIGURE P.3.4

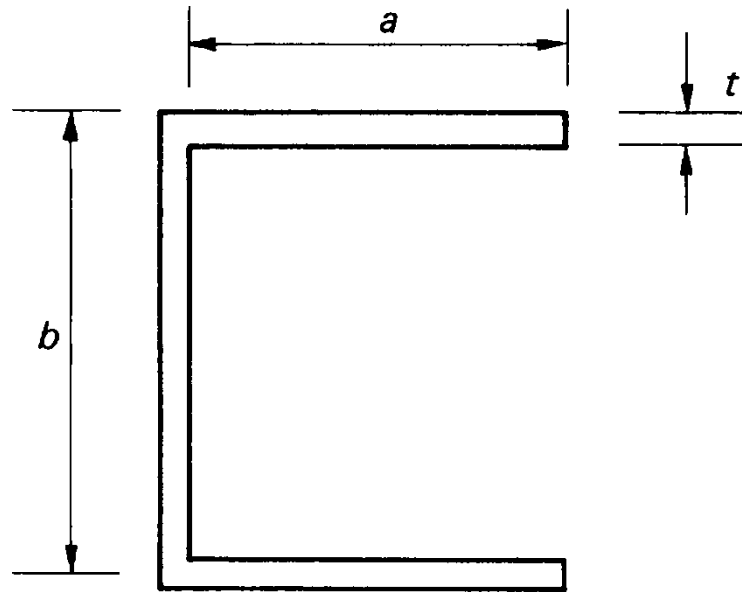


FIGURE P.3.5