

Chapter 6

Matrix methods

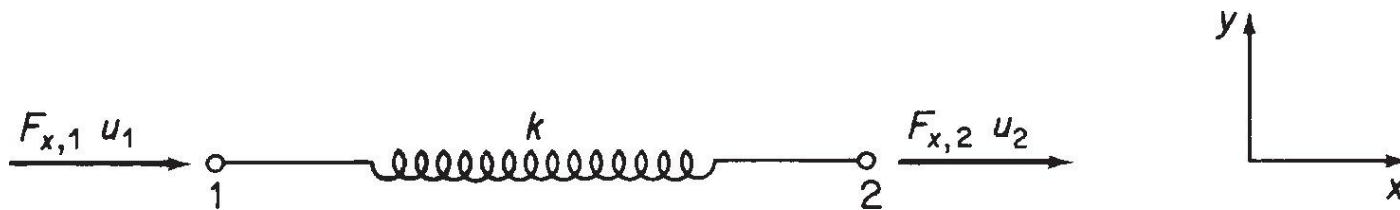


FIGURE 6.1 Determination of Stiffness Matrix for a Single Spring

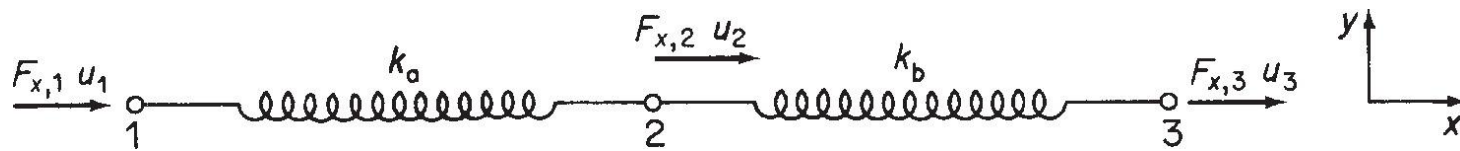


FIGURE 6.2 Stiffness Matrix for a Two-Spring System

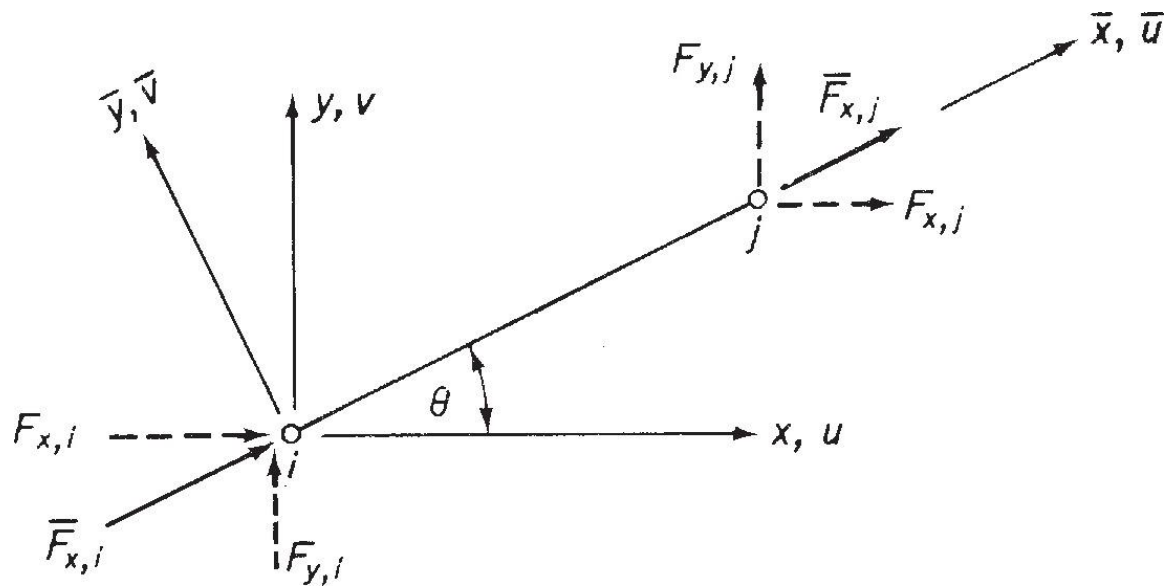


FIGURE 6.3 Local and Global Coordinate Systems for a Member of a Plane Pin-Jointed Framework

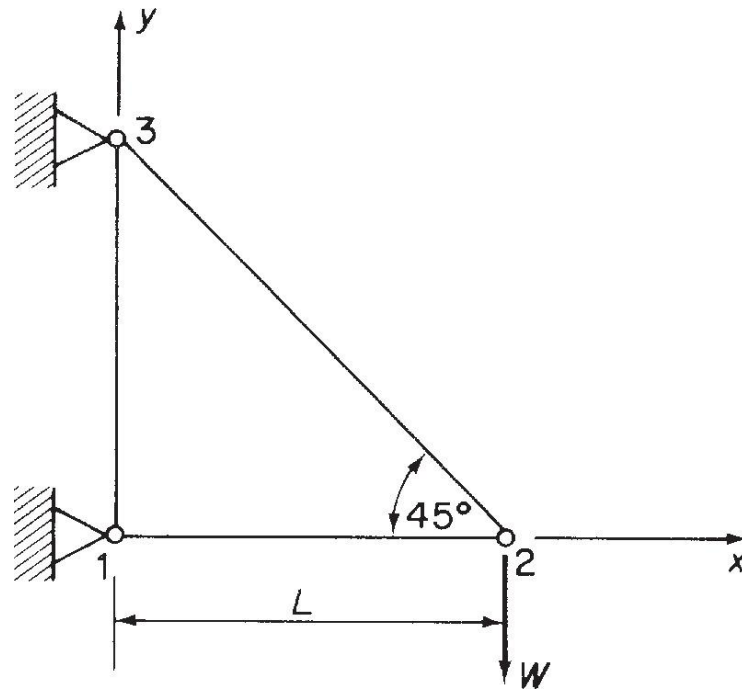


FIGURE 6.4 Pin-Jointed Framework of Example 6.1

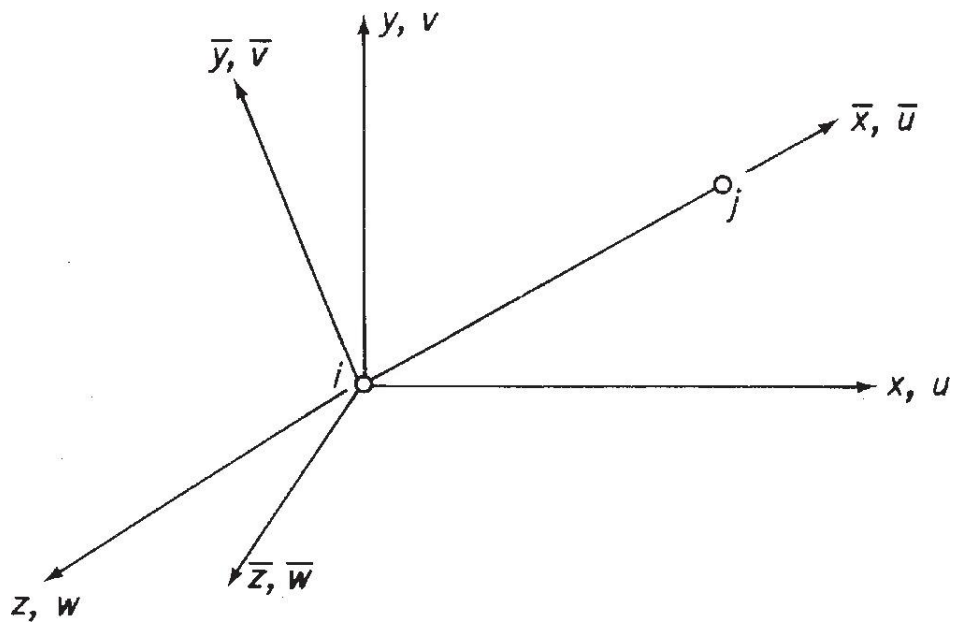


FIGURE 6.5 Local and Global Coordinate Systems for a Member in a Pin-Jointed Space Frame

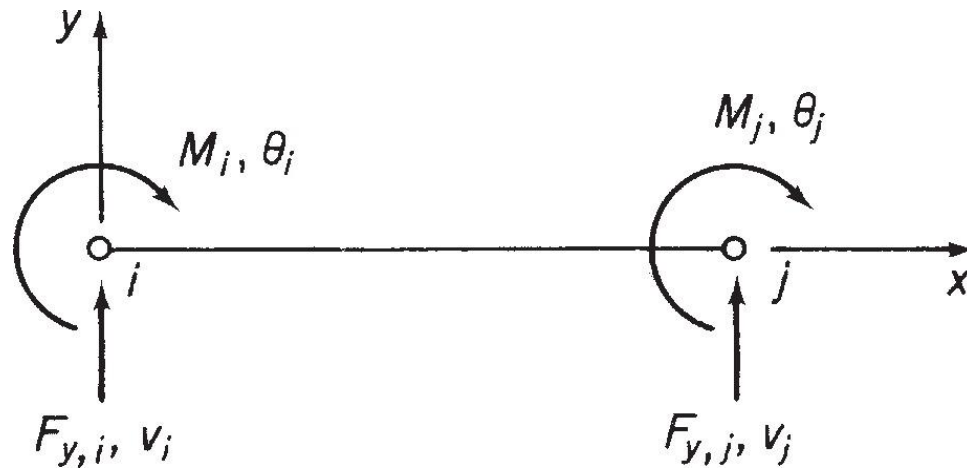


FIGURE 6.6 Forces and Moments on a Beam-Element

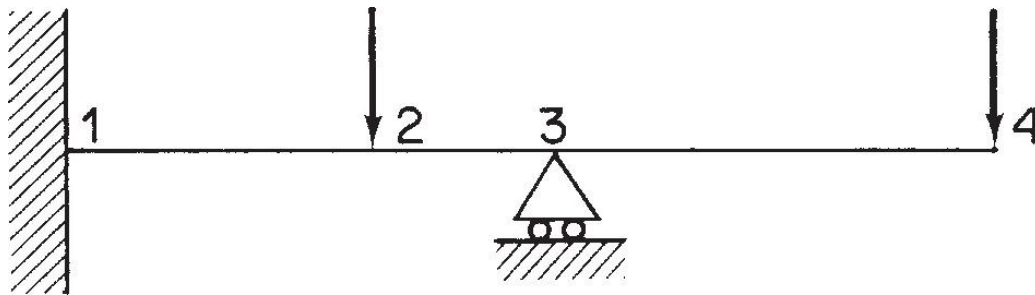


FIGURE 6.7 Idealization of a Beam into Beam–Elements

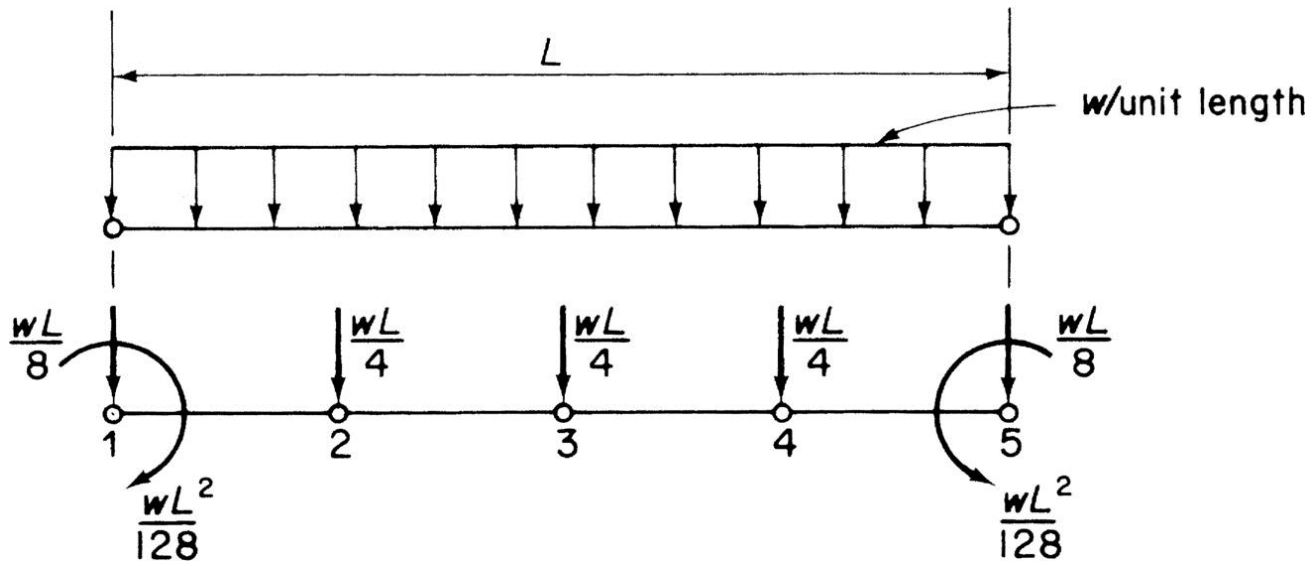


FIGURE 6.8 Idealization of a Beam Supporting a Uniformly Distributed Load

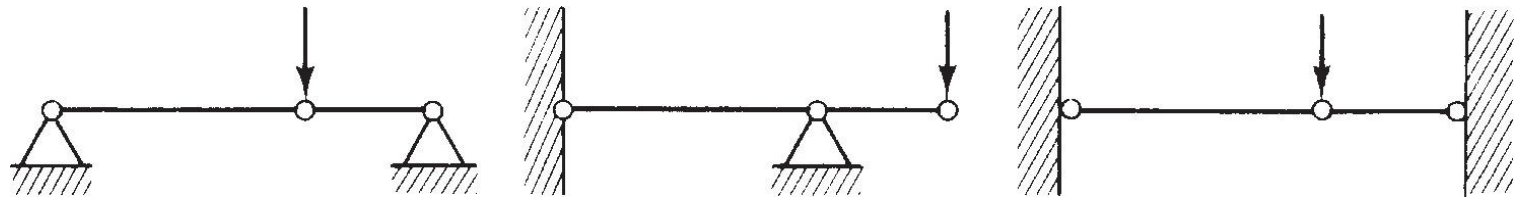


FIGURE 6.9 Idealization of Beams into Beam–Elements

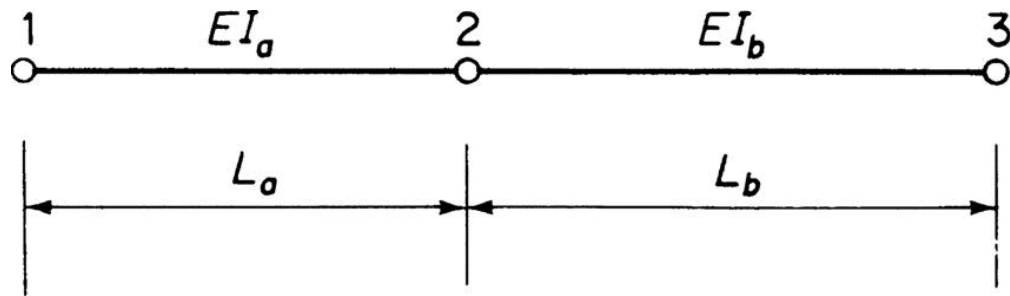


FIGURE 6.10 Assemblage of Two Beam-Elements

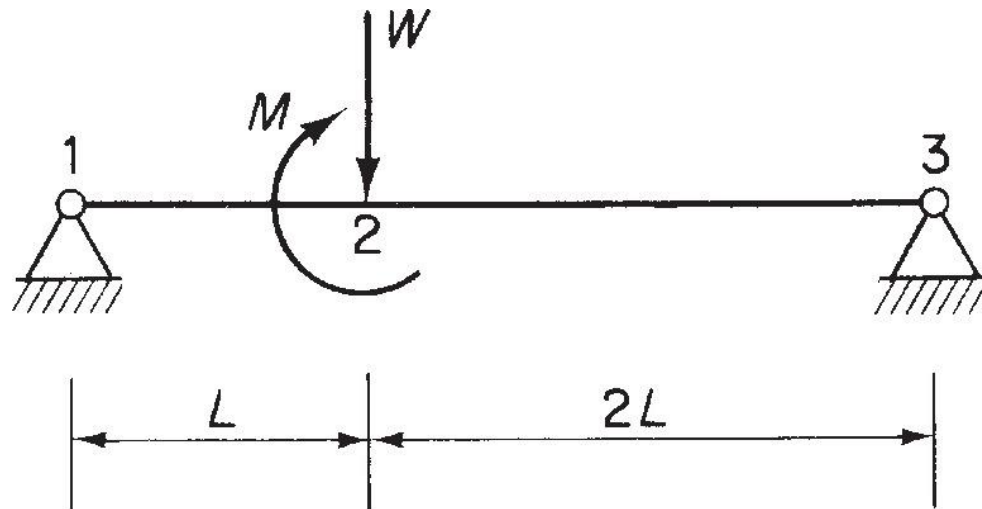


FIGURE 6.11 Beam of Example 6.2

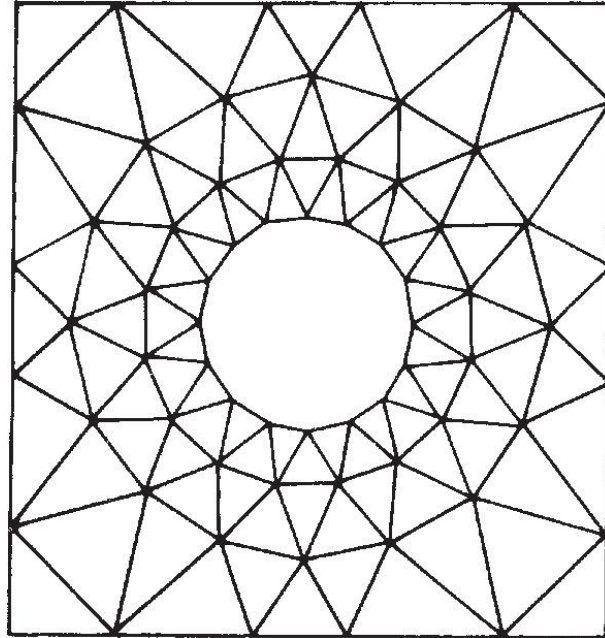


FIGURE 6.12 Finite Element Idealization of a Flat Plate with a Central Hole

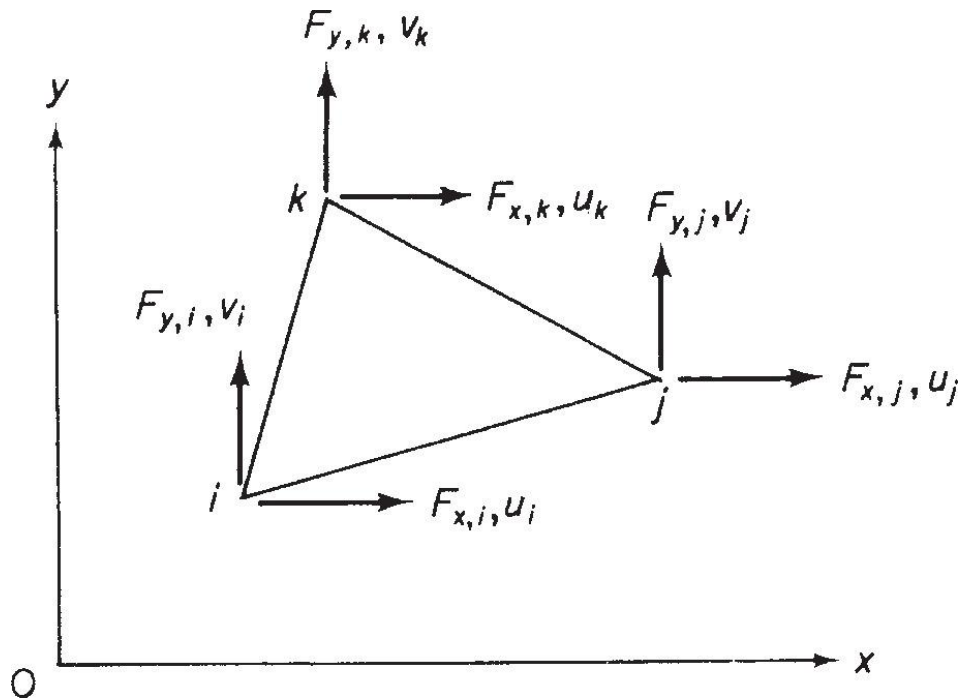


FIGURE 6.13 Triangular Element for Plane Elasticity Problems

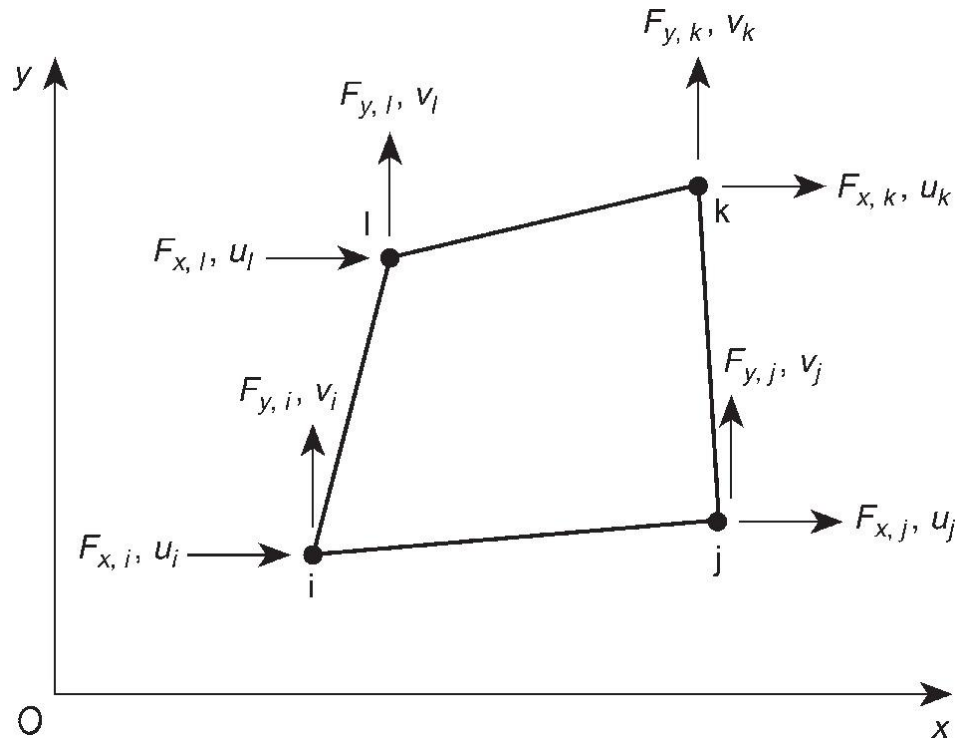


FIGURE 6.14 Quadrilateral element Subjected to Nodal In-Plane Forces and Displacements

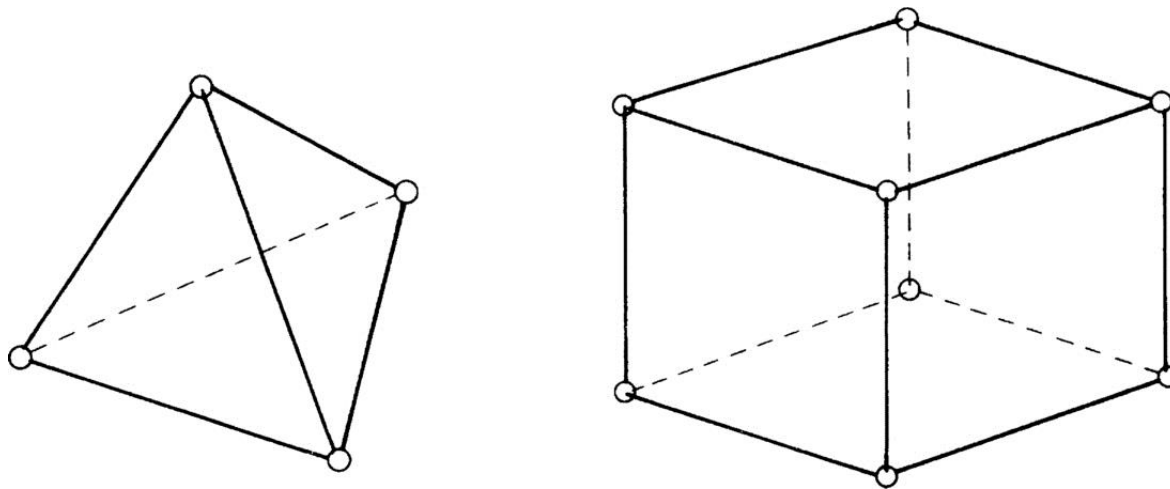


FIGURE 6.15 Tetrahedron and rectangular Prism Finite Elements for Three-Dimensional Problems

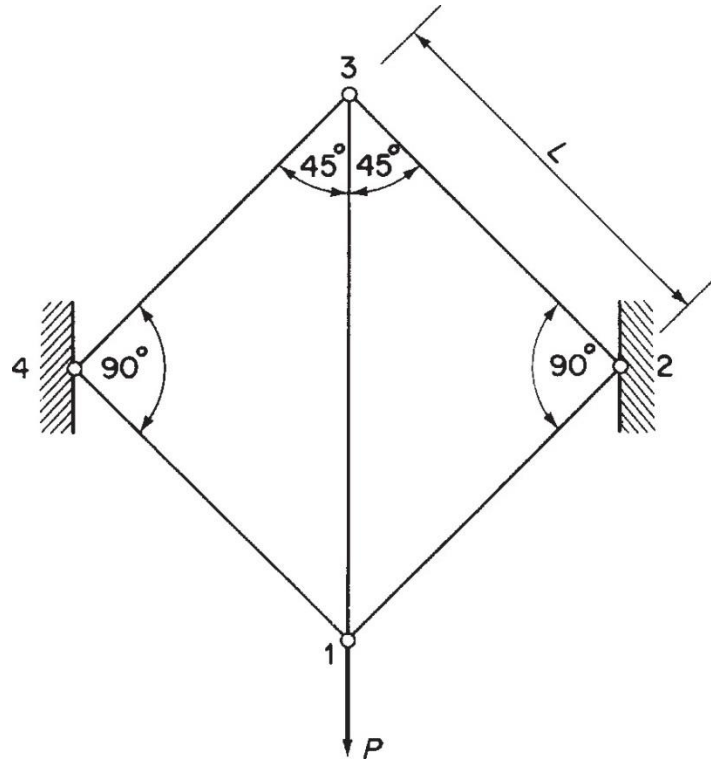


FIGURE P.6.1

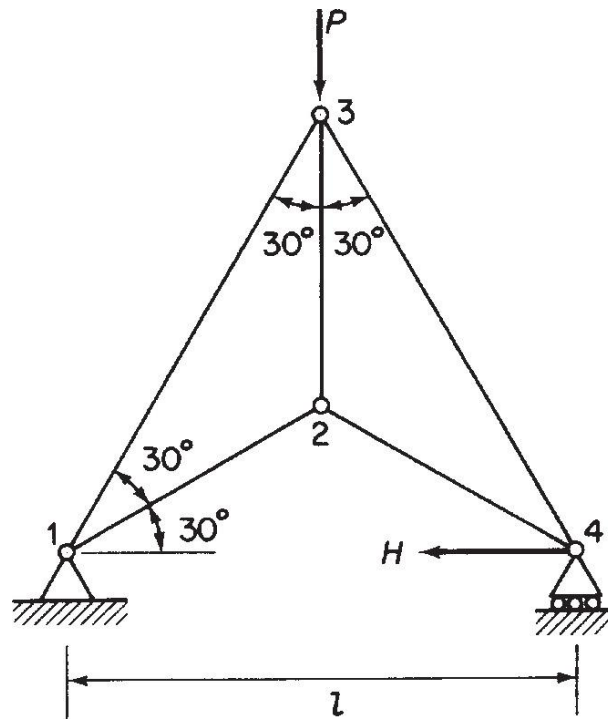


FIGURE P.6.2

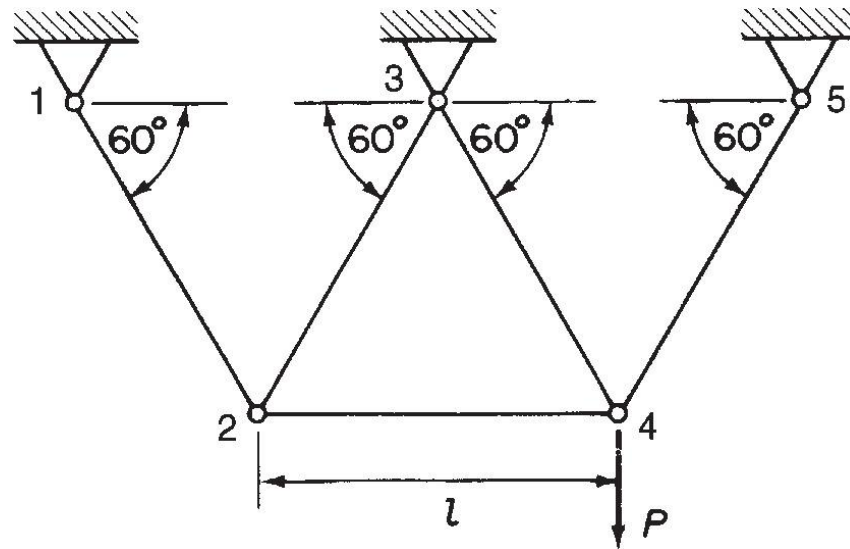


FIGURE P.6.3

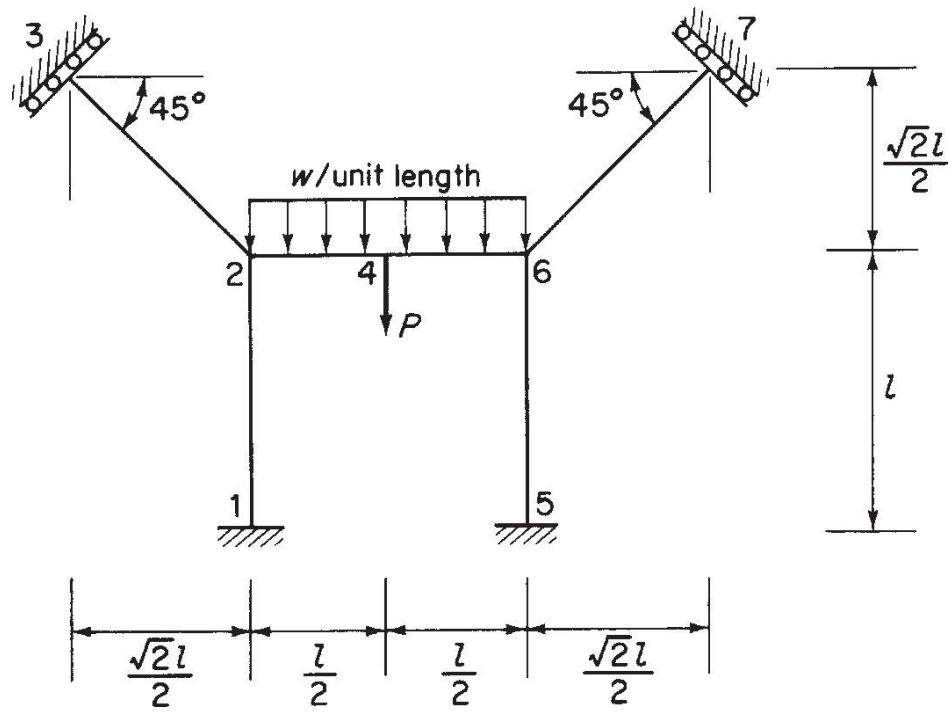


FIGURE P.6.4

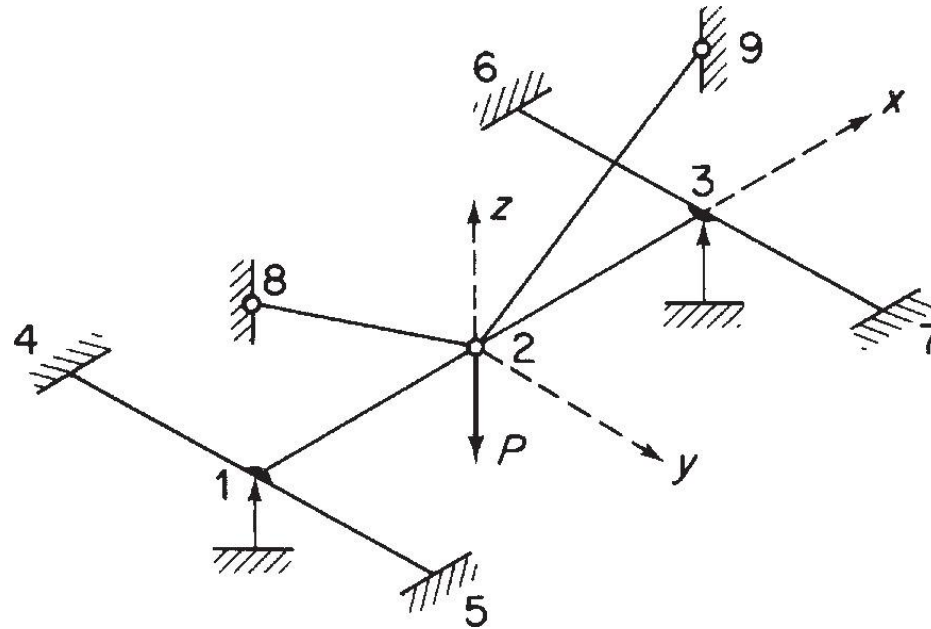


FIGURE P.6.5

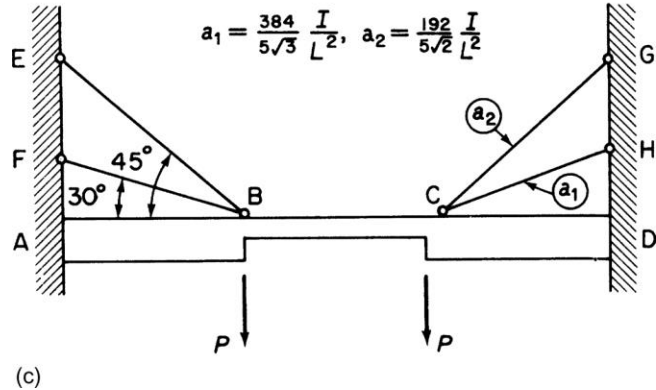
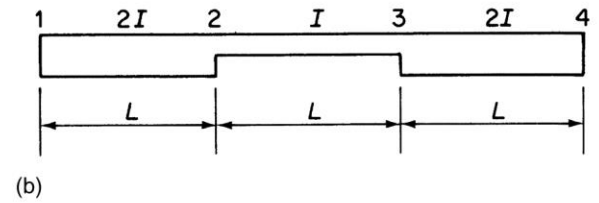
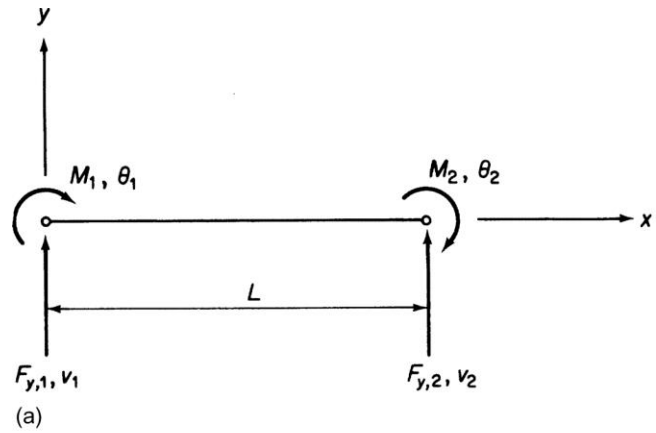


FIGURE P.6.6

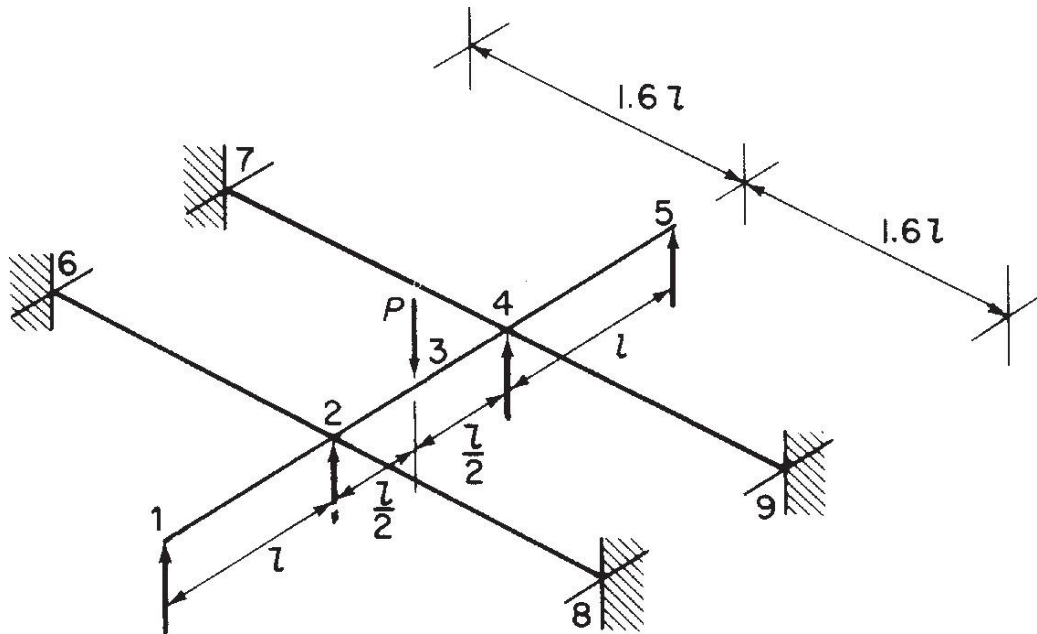


FIGURE P.6.7

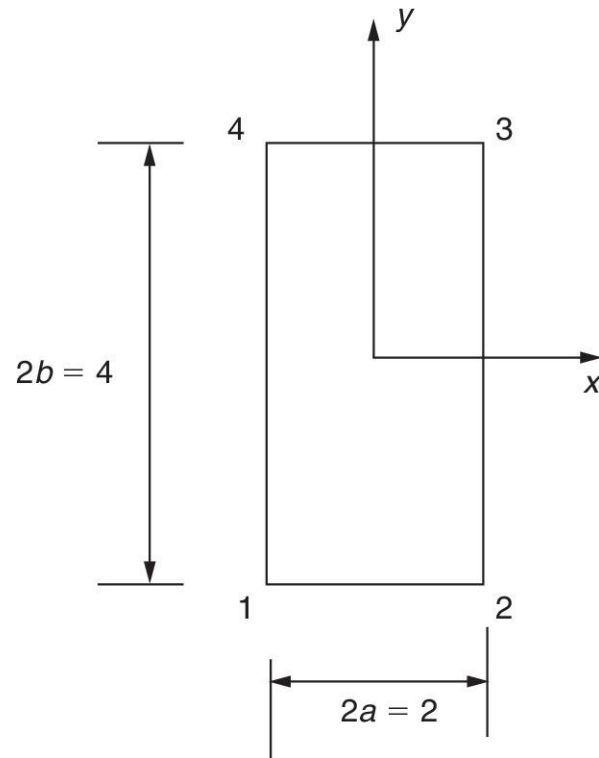


FIGURE P.6.14