5.4 For the rigid frame shown in Figure P5–4, determine (1) the nodal displacements and rotation at node 4, (2) the reactions, and (3) the forces in each element. Then check equilibrium at node 4. Finally, draw the shear force and bending moment diagrams for each element. Let $E = 30 \times 10^3$ ksi, $A = 8$ in^2, and $I = 800$ in^4 for all elements.
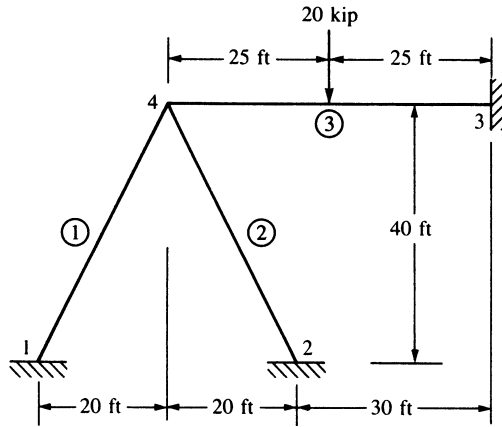

Figure P5–4

5.5–5.15 For the rigid frames shown in Figures P5–5—P5–15, determine the displacements and rotations of the nodes, the element forces, and the reactions. The values of $E, A,$ and I to be used are listed next to each figure.
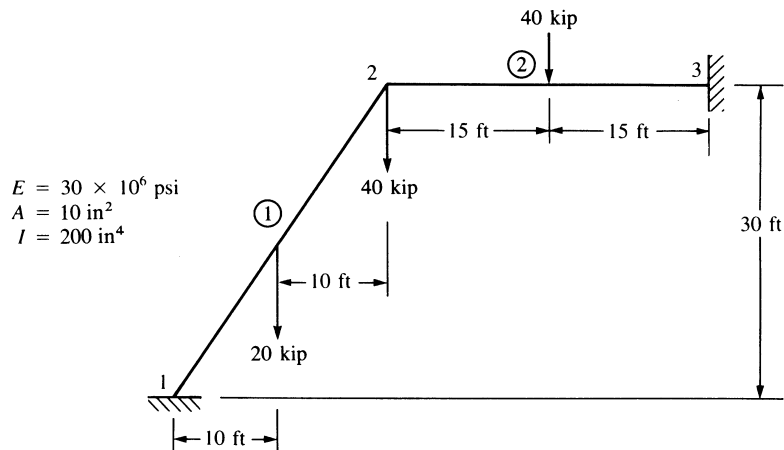

$E = 30 \times 10^6$ psi
$A = 10$ in^2
$I = 200$ in^4

Figure P5–5