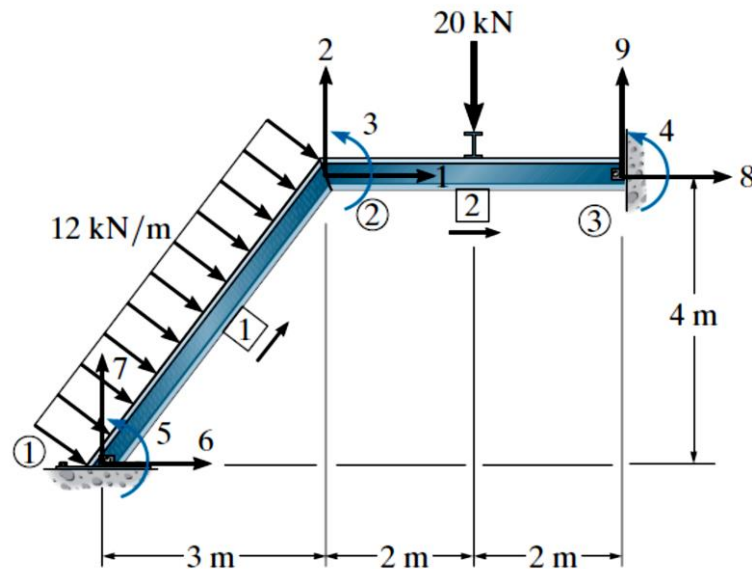


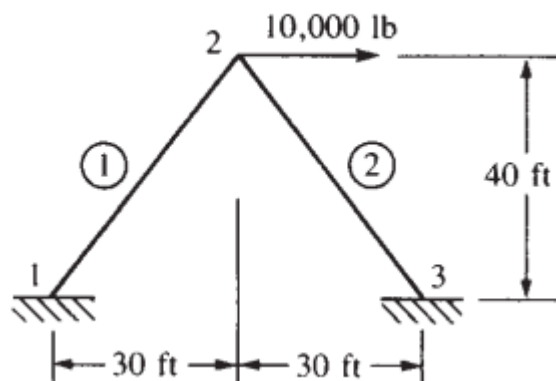
1. Determine the internal moment at the middle of member 2 for the two-member frame using stiffness method.

Take $E = 200 \text{ GPa}$, $I = 350(10^6) \text{ mm}^4$, $A = 20(10^3) \text{ mm}^2$ for each member. Joints 3 is pinned and joints 1 and 2 are fixed.



Ref: R.C. Structural Analysis, Hibbeler ,9th Ed. (with some changes)

2. For the rigid frame shown in the figure, determine (1) the displacement components and the rotation at node 2, (2) the support reactions of joint 3, and (3) the maximum shear in element 2, if joint 2 is a moment connection. Let $E=30 \times 10^6 \text{ psi}$, $A=10 \text{ in}^2$, and $I=500 \text{ in}^4$ for both elements.



Ref: The First Course in the Finite Element, D. L. Logan, 4th Edition.