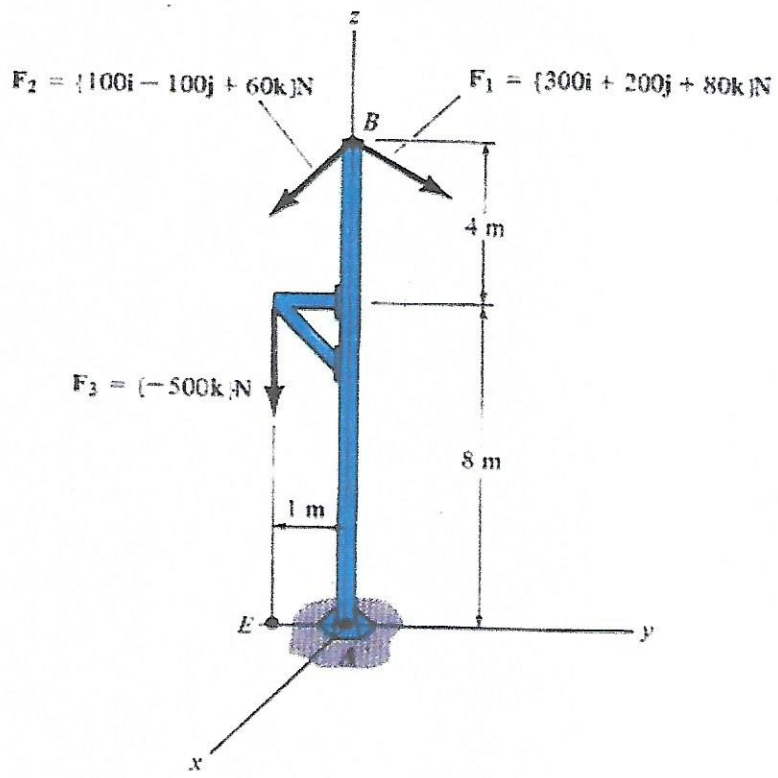
3D Moments 3

Use vector analysis compute the moment of each of the three forces acting on the column about point A.



$$\vec{m}_{F_1} = \vec{r}_{AB} \times \vec{F}_1 = [0\ 0\ 12] \times [300\ 200\ 80]$$

$$\vec{m}_{F_1} = [-2400\ \ 3600\ \ 0] = \{-2400\hat{i} + 3600\hat{j}\}\ Nm \quad \text{About A}$$

$$\vec{m}_{F_2} = \vec{r}_{AB} \times \vec{F}_2 = [0\ 0\ 12] \times [100\ -100\ 60]$$

$$\vec{m}_{F_2} = \{1200\hat{i} + 1200\hat{j}\}\ Nm \quad \text{About A}$$

$$\vec{m}_{F_3} = \vec{r}_{AE} \times \vec{F}_3 = [0\ -1\ 0] \times [0\ 0\ -500]$$

$$\vec{m}_{F_3} = \{500\hat{i}\}\ Nm \quad \text{About A}$$