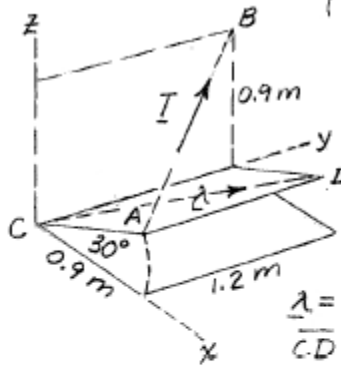


2/106 $T = 150 \text{ N}$



Coordinates of A are
 $(0.9 \cos 30^\circ, 0, 0.9 \sin 30^\circ)$
 or $(0.779, 0, 0.45) \text{ m}$

$$\overline{AB} = \sqrt{0.779^2 + 1.2^2 + (0.9 - 0.45)^2}$$

$$= 1.50 \text{ m}$$

$$l = -0.779/1.5, m = 1.2/1.5, n = \frac{0.45}{1.5}$$

$$\underline{T} = \frac{100}{1.5}(-0.779\underline{i} + 1.2\underline{j} + 0.45\underline{k}) \text{ N}$$

$\underline{\lambda}$ = unit vector along CD

$$\overline{CD} = \sqrt{0.9^2 + 1.2^2} = 1.5 \text{ m}$$

$$l = 0.779/1.5, m = 1.2/1.5, n = 0.45/1.5$$

$$\underline{\lambda} = \frac{1}{1.5}(0.779\underline{i} + 1.2\underline{j} + 0.45\underline{k})$$

$$\begin{aligned} T_{CD} &= \underline{T} \cdot \underline{\lambda} = \frac{100}{1.5}(-0.779\underline{i} + 1.2\underline{j} + 0.45\underline{k}) \cdot \frac{1}{1.5}(0.779\underline{i} + 1.2\underline{j} + 0.45\underline{k}) \\ &= \frac{100}{2.25}(-0.779^2 + 1.2^2 + 0.45^2) = \frac{100}{2.25}(-0.6075 + 1.44 + 0.2025) \\ &= \frac{400}{9}(1.035) = \underline{46.0 \text{ N}} \end{aligned}$$

2/124

$$\begin{aligned} M_o &= (250 \sin 60^\circ)12 + (250 \cos 60^\circ) \sin 40^\circ (8 - 4.2) \\ &= \underline{2900 \text{ lb-in.}} \end{aligned}$$

2/144 $R = \sum F_z = 70 + 30 - 80 - 60 - 50 = -90 \text{ lb}$

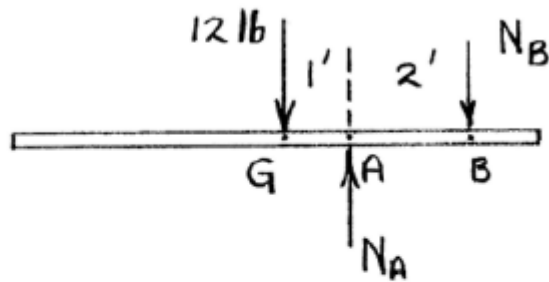
$$-R|_y = \sum M_x: -90y = 30(12) + 70(12) - 60(6) - 50(12)$$

$$y = \underline{-2.67 \text{ in.}}$$

$$|R|_x = \sum M_y: 90x = 80(10) - 30(10) - 50(8)$$

$$x = \underline{1.11 \text{ in.}}$$

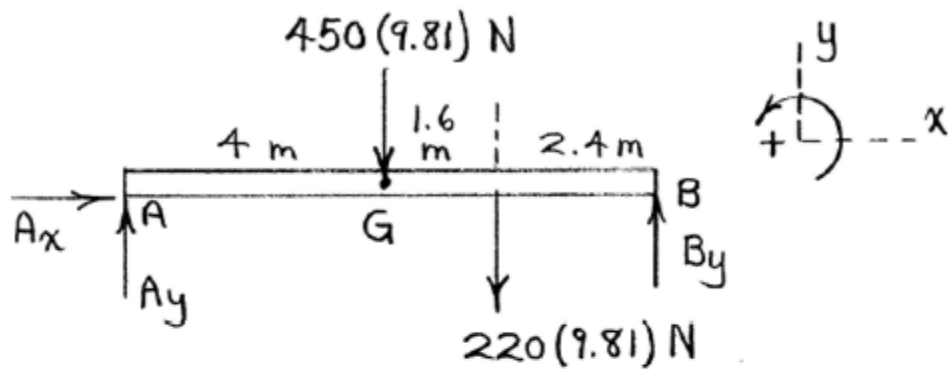
3/2



$$\sum M_B = 0 : 12(3) - N_A(2) = 0$$

$$\underline{N_A = 18 \text{ lb}}$$

3/4



$$\text{From } \sum F_x = 0, \quad A_x = 0$$

$$\sum M_A = 0 : -450(9.81)(4) - 220(9.81)(5.6)$$

$$+ B_y(8) = 0, \quad \underline{B_y = 3720 \text{ N}}$$

$$\sum F_y = 0 : A_y - 450(9.81) - 220(9.81) + 3720 = 0$$

$$\underline{A_y = 2850 \text{ N}}$$