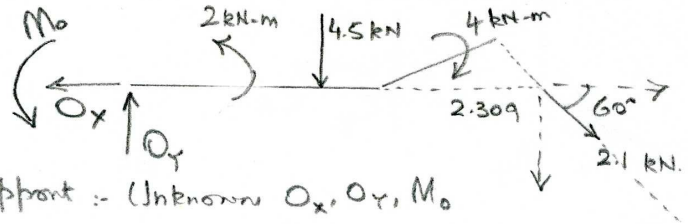
Assignment 6.

(1)



Fixed Support :- Unknown O_x, O_y, M_o

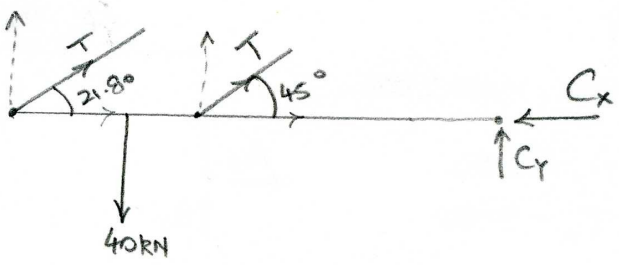
$O_x = 2.1 \cos 60 = 1.05$ kN

$O_y = 4.5 + 2.1 \sin 60 = 6.31$ kN

$$M_o + 2 - 4.5 \times 4 - 4 - 2.1 \sin 60 \times (5 + 2.309) = 0$$

$$M = 33.29 \text{ kN-m}$$

(2)



$\Sigma M_c = 0$

$$40 \times 5.5 = T \sin 21.80 \times 7 + T \sin 45 \times 4$$

$$220 = T(2.6 + 2.828)$$

$$T = 40.530 \text{ kN.}$$

$\Sigma F_y = 0$

$$C_y - 40 + 40.530 \sin 21.80 + 40.530 \sin 45 = 0$$

$$C_y = -3.710 \text{ kN}$$

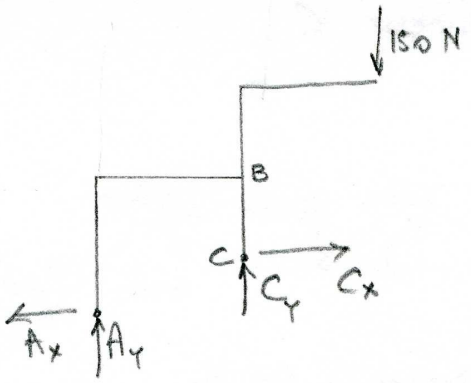
$$= 3.710 \text{ kN} \downarrow$$

$\Sigma F_x = 0$

$$C_x = 40.530 \cos 21.80 + 40.530 \cos 45$$

$$= 66.3 \text{ kN.}$$

(3)



$\Sigma F_x = 0$

$A_x = C_x$ — (1)

$\Sigma F_y = 0$

$A_y + C_y = 150$ — (2)

$\Sigma M_A = 0$

$C_x \times 100 + 150 \times 400 = C_y \times 200$

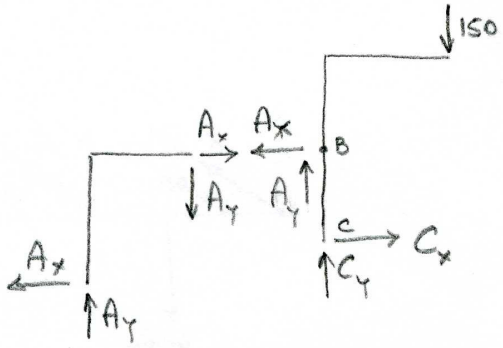
$60,000 = 200C_y - 100C_x$ — (3)

$\Sigma M_c = 0$

$A_y \times 100 = 150 \times 200$

$A_y = 300$

$C_x = 300$



Substituting value of C_x in (3)

$C_y = 450$ N

$A_y = -300$N

BONUS

$\Sigma F_y = 0$

$T_A + T_B - (45 \times 9.81) = 0$

$\Sigma M_B = 0$

$T_A \times 3 = 441.45 \times 2$

$T_A = 294.3$N