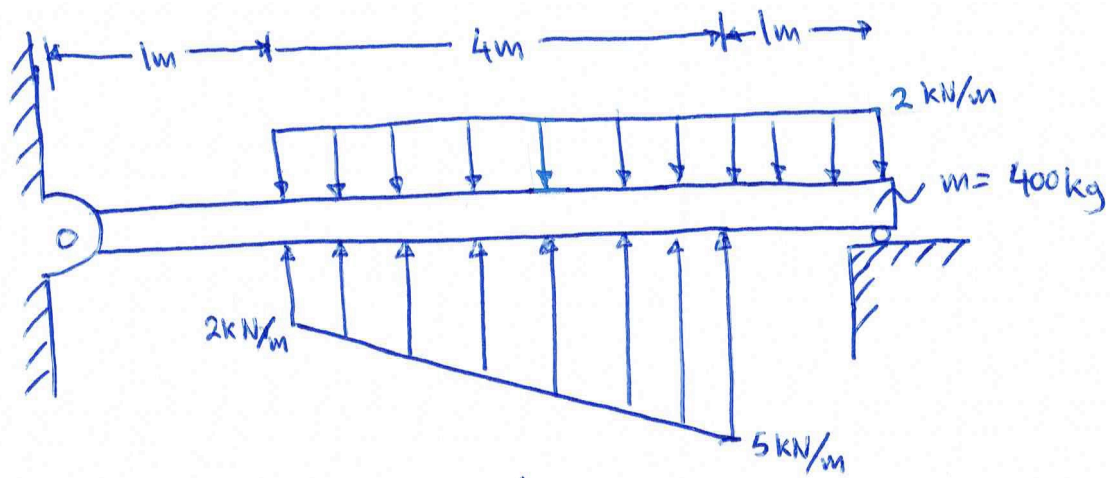
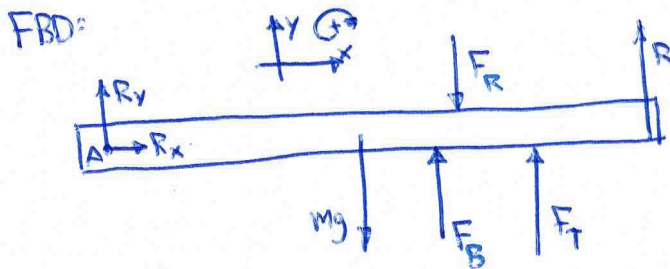
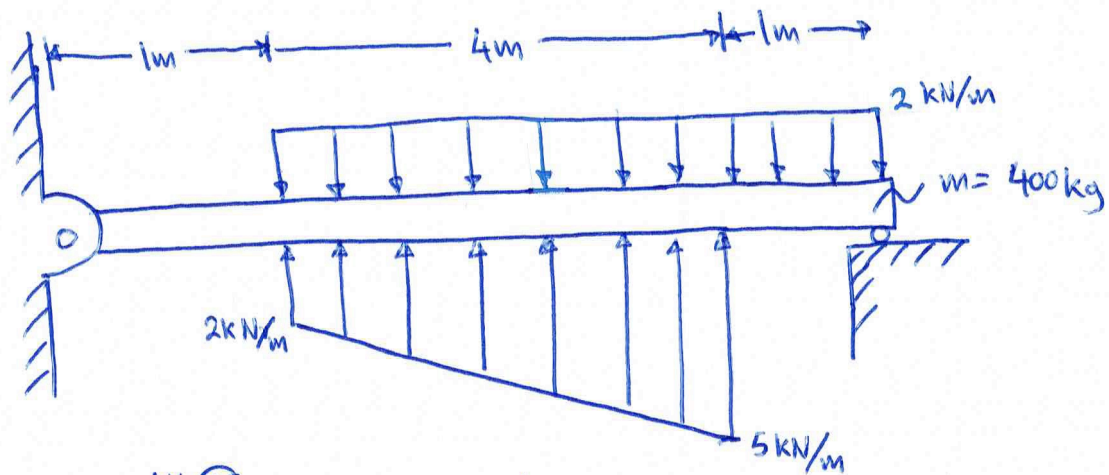


Determine all the reaction forces on the beam member



Determine all the reaction forces on the beam member



Newton's 2nd Law

$$\sum F_x = ma_x = R_x$$

$$\sum F_y = ma_y = R_y - mg + F_B - F_R + F_T + R$$

$$\sum M = I_{AA} = 3mg - x_B F_B + x_R F_R - x_T F_T - 6R$$

$$F_R = (5)(2000) = 10000 \text{ N}$$

$$x_R = 1 + \frac{1}{2}(5) = 3.5 \text{ m}$$

$$F_B = (4)(2000) = 8000 \text{ N}$$

$$x_B = 1 + \frac{1}{2}(4) = 3 \text{ m}$$

$$(1) F_T = \frac{1}{2}(4)(3000) = 6000 \text{ N}$$

$$(2) x_T = 1 + \frac{2}{3}(4) = 3.6$$

(3)

Solve (1) for R_x :

$$R_x = 0$$

Solve (3) for R :

$$R = \frac{1}{6}(3mg - x_B F_B + x_R F_R - x_T F_T)$$

$$= \frac{1}{6}[3(400)(9.81) - (3)(8000) + (3.5)(10000) - (3.6)(6000)]$$

$$R = 129 \text{ N}$$

Solve (2) for R_y :

$$R_y = mg - F_B + F_R - F_T - R$$

$$= (400)(9.81) - 8000 + 10000 - 6000 - [129]$$

$$R_y = -205 \text{ N}$$