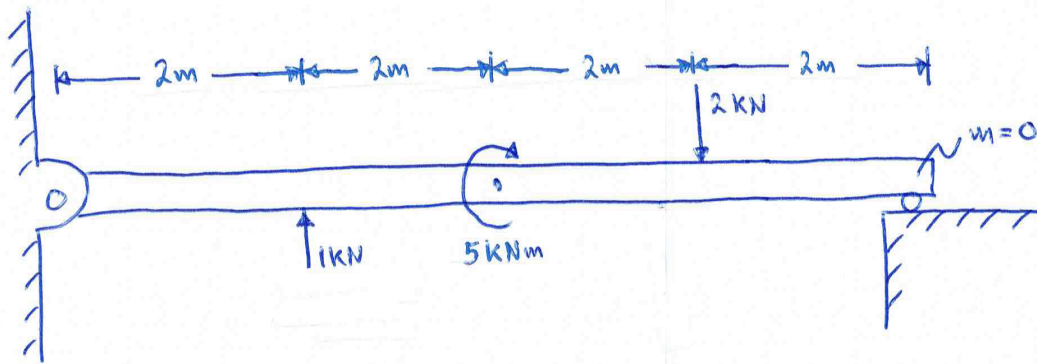
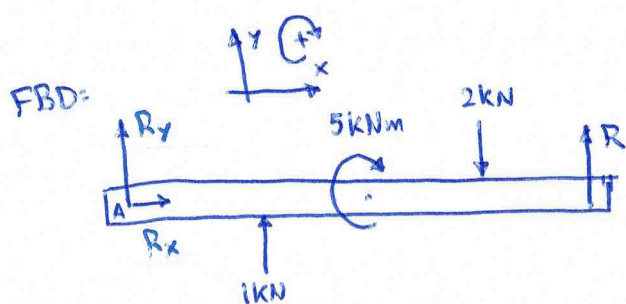
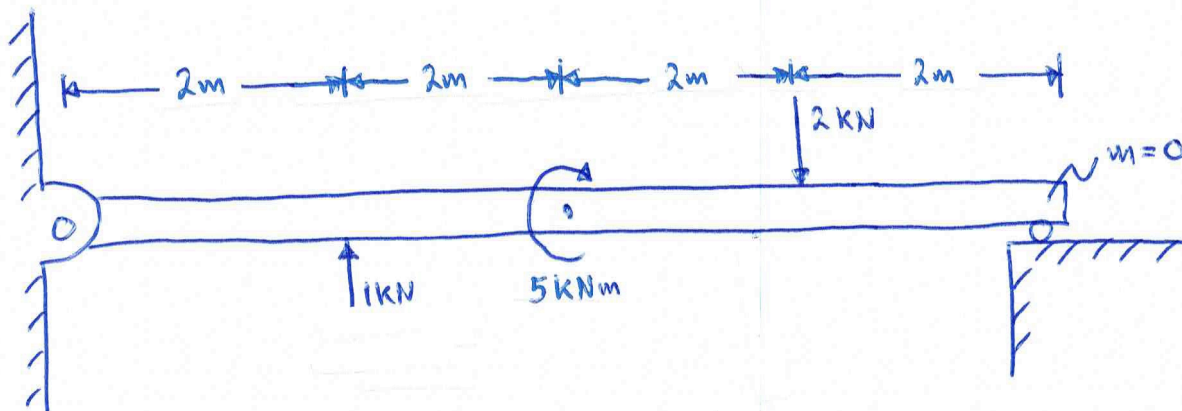


Determine the shear, axial and bending moment equations for



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Newton's Laws:

$$\sum F_x = \cancel{w_x} = R_x$$

$$\sum F_y = \cancel{w_y} = R_y + 1000 - 2000 + R$$

$$\sum M = \cancel{I_A} = -(2)(1000) + 5000 + (6)(2000) - (8)(R)$$

solve (1) for R_x :

$$R_x = 0$$

solve (3) for R :

$$R = \frac{1}{8}(15000) = 1875 \text{ N}$$

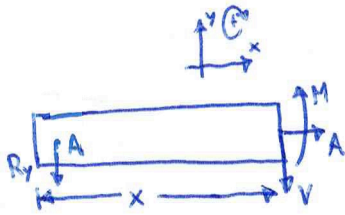
solve (2) for R_y :

$$R_y = 1000 - R$$

sub (3n) into above:

$$R_y = 1000 - [1875] = -875 \text{ N}$$

section cut ($0 < x < 2\text{m}$)



$$\begin{aligned}\sum F_x = \cancel{w_x} \alpha_x &= A & (4) \\ \sum F_y = \cancel{w_y} \alpha_y &= -R_y - V & (5) \\ \sum M = \cancel{I_x} \alpha_A &= xV - M & (6)\end{aligned}$$

Solve (4) for A:

$$\boxed{A = 0}$$

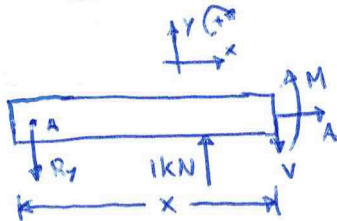
Solve (5) for V:

$$\boxed{V = -R_y = -875\text{N}}$$

Solve (6) for M:

$$\boxed{M = xV = -875x}$$

section cut ($2 < x < 4$)



$$\begin{aligned}\sum F_x = \cancel{w_x} \alpha_x &= A & (7) \\ \sum F_y = \cancel{w_y} \alpha_y &= -R_y + 1000 - V & (8) \\ \sum M = \cancel{I_x} \alpha_A &= -(2)(1000) - M + xV & (9)\end{aligned}$$

Solve (7) for A:

$$\boxed{A = 0}$$

Solve (8) for V:

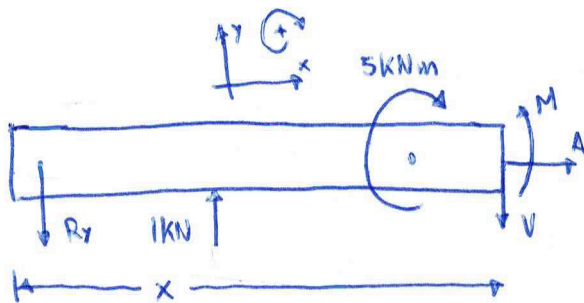
$$\boxed{V = -R_y + 1000 = -875 + 1000 = 125\text{ N}}$$

Solve (9) for M:

$$M = Vx - 2000$$

$$\boxed{M = 125x - 2000}$$

section cut ($4 < x < 6$)



solve (10) for A:

$$A = 0$$

solve (11) for V:

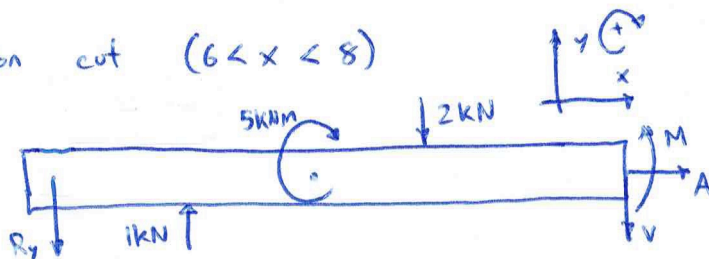
$$V = -R_y + 1000 = -875 + 1000 = 125 \text{ N}$$

solve (12) for M:

$$M = 3000 + Vx$$

$$M = 125x + 3000$$

section cut ($6 < x < 8$)



solve (13) for A:

$$A = 0$$

solve (14) for V:

$$V = -R_y - 1000 = -875 - 1000 = -1875 \text{ N}$$

solve (15) for M:

$$M = 15000 + Vx$$

$$M = -1875x + 15000$$

$$\sum F_x = \cancel{w_x} \alpha_x = A \quad (10)$$

$$\sum F_y = \cancel{w_y} \alpha_y = -R_y + 1000 - V \quad (11)$$

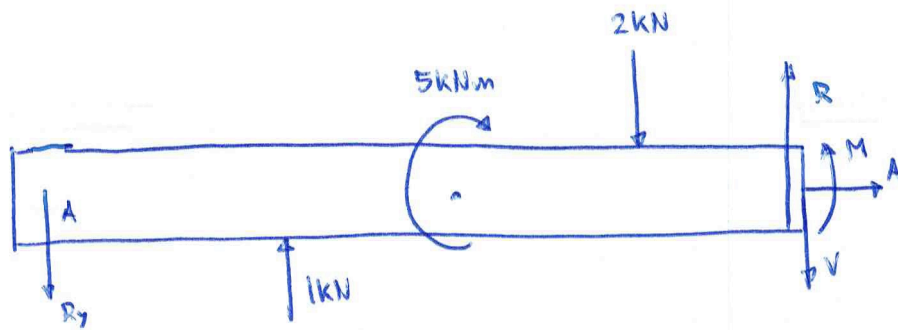
$$\sum M = \cancel{I_A} \alpha_A = -(2)(1000) + 5000 + Vx - M \quad (12)$$

$$\sum F_x = \cancel{w_x} \alpha_x = A \quad (13)$$

$$\sum F_y = \cancel{w_y} \alpha_y = -R_y + 1000 - 2000 - V \quad (14)$$

$$\sum M = \cancel{I_A} \alpha_A = -(2)(1000) + 5000 + (6)(2000) + Vx - M \quad (15)$$

section cut @ $x = 8$



$$\sum F_x = \max = A \quad (16)$$

$$\sum F_y = \max = -R_y + 1000 - 2000 + R - V \quad (17)$$

$$\sum M = \sum I_{Ax} = -(2)(1000) + 5000 + (6)(2000) - (8)(R) + Vx - M \quad (18)$$

Solve (16) for A:

$$\boxed{A = 0}$$

Solve (17) for V:

$$\begin{aligned} V &= -R_y + 1000 - 2000 + R \\ &= [-875] + 1000 - 2000 + [1875] \end{aligned}$$

$$\boxed{V = 0}$$

Solve (18) for M:

$$\begin{aligned} M &= 15000 - 8R + Vx \\ &= 15000 - 8[1875] + [0]x \end{aligned}$$

$$\boxed{M = 0}$$