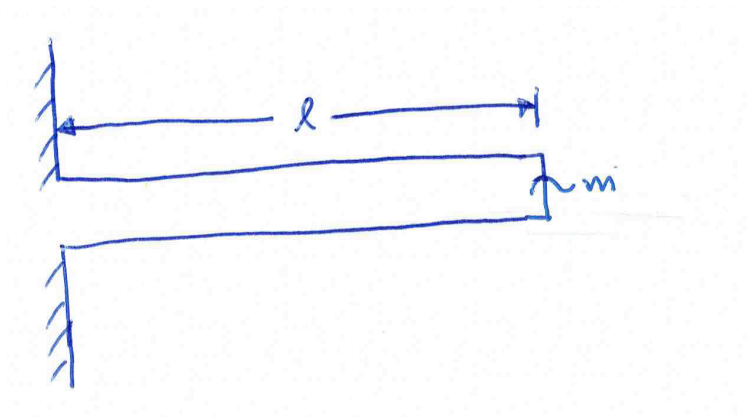


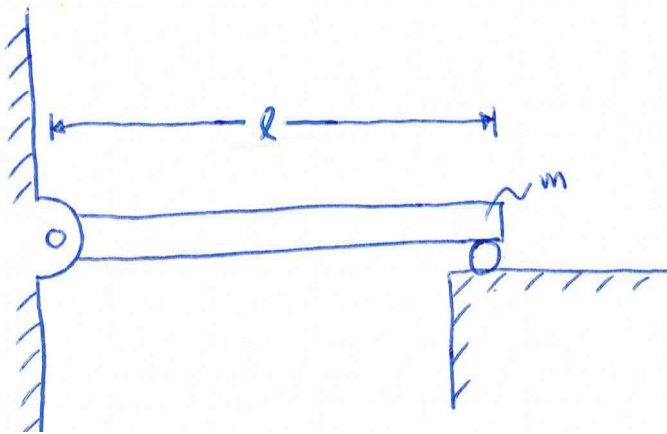
Draw the shear and bending moment diagrams for



$$l = 10\text{ m}$$

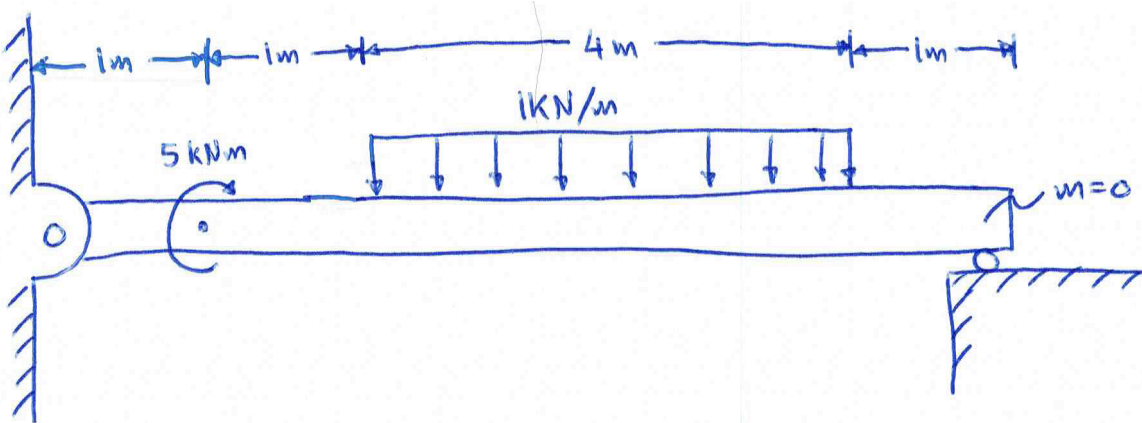
$$m = 100\text{ kg}$$

Draw the shear and bending moment diagrams for

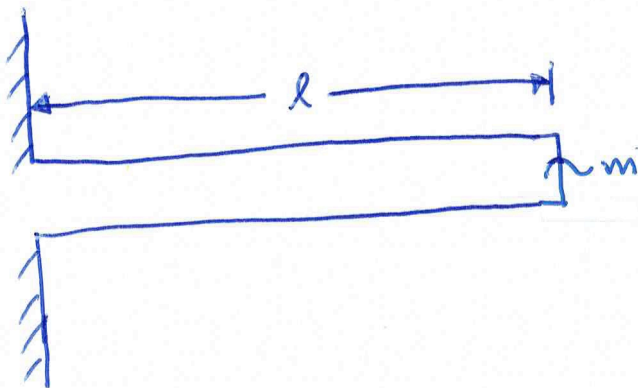


$$l = 10 \text{ m}$$
$$m = 100 \text{ kg}$$

Draw the shear and bending moment diagrams for

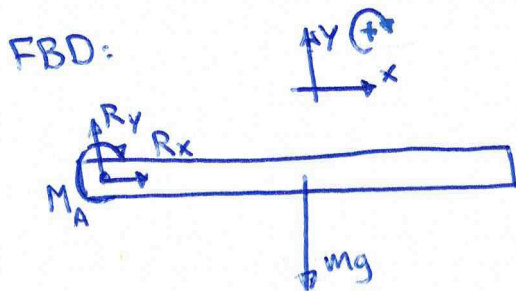


Determine the shear, axial and bending moment equations for



$$l = 10 \text{ m}$$

$$m = 100 \text{ kg}$$



Newton's Laws

$$\sum F_x = m a_x = R_x \quad (1)$$

$$\sum F_y = m a_y = R_y - mg \quad (2)$$

$$\sum M = I_A \alpha = M_A + \frac{l}{2} mg \quad (3)$$

Solve (1) for R_x :

$$R_x = 0 \quad (1a)$$

Solve (2) for R_y :

$$R_y = mg \quad (2a)$$

Solve (3) for M :

$$M_A = -\frac{lmg}{2} \quad (3a)$$

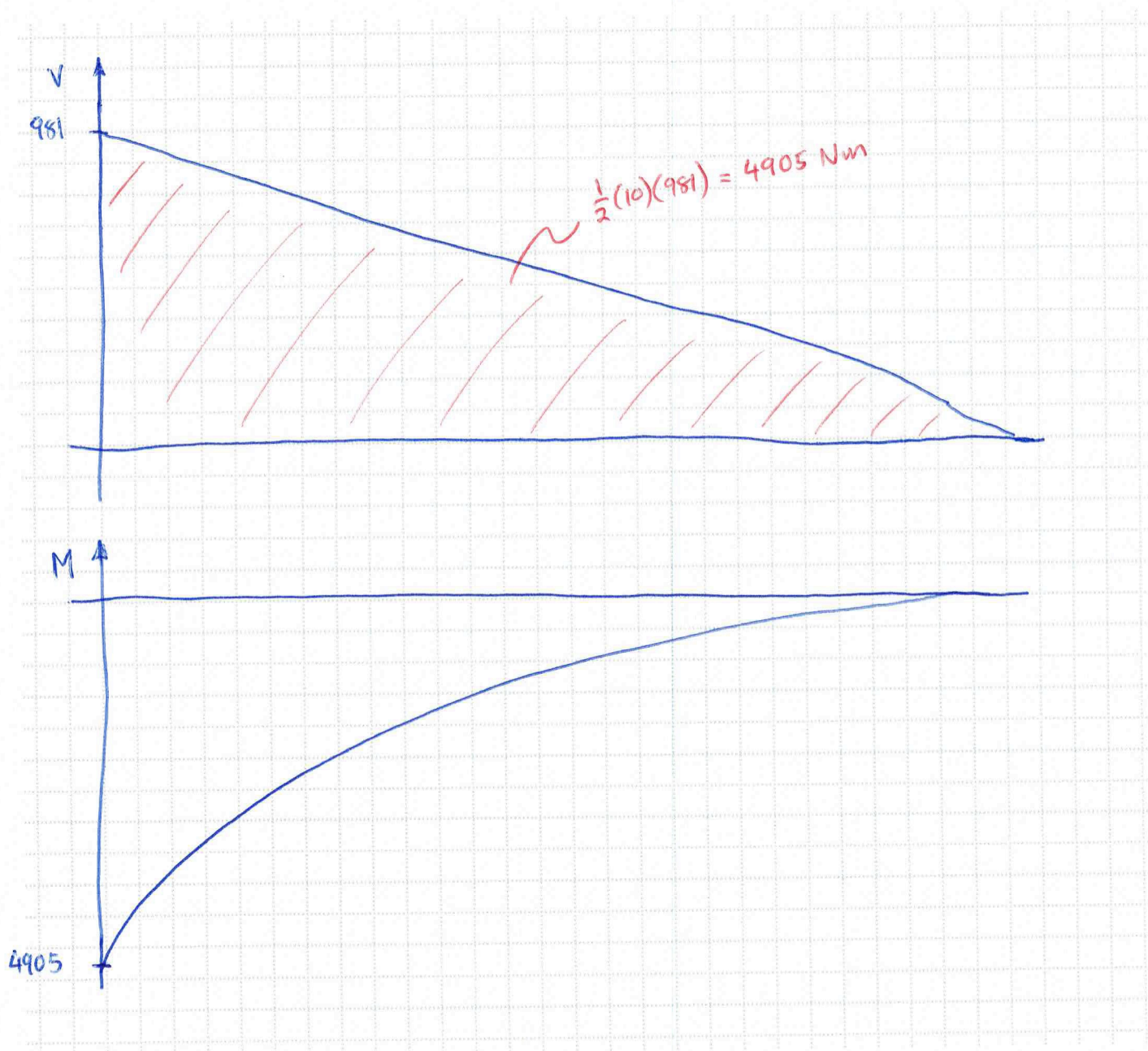
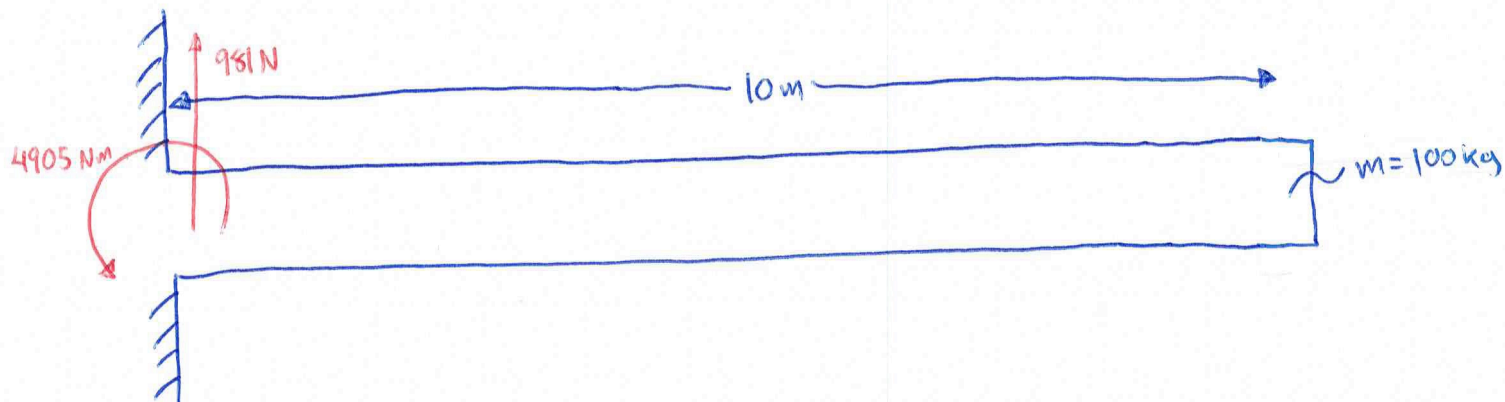
with numbers:

$$R_x = 0$$

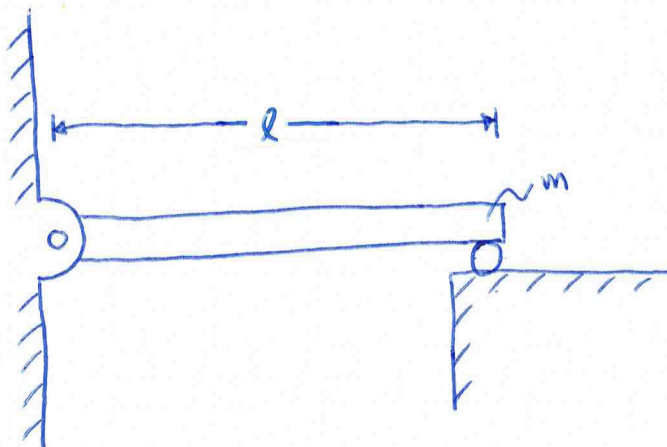
$$R_y = (100)(9.81) = 981 \text{ N}$$

$$M_A = -\frac{(10)(100)(9.81)}{2} = -4905 \text{ Nm}$$

Draw the shear and bending moment diagrams for



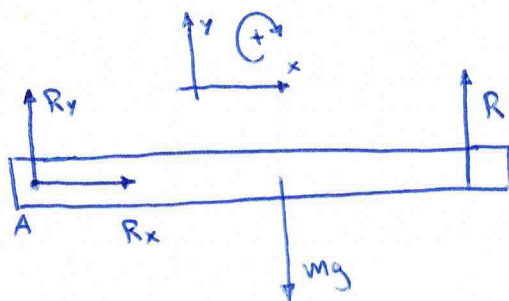
Determine the shear, axial and bending moment equations for



$$l = 10 \text{ m}$$

$$m = 100 \text{ Kg}$$

FBD:



Newton's Law:

$$\sum F_x = m a_x = R_x \quad (1)$$

$$\sum F_y = m a_y = R_y + R - mg \quad (2)$$

$$\sum M = I_A \alpha_A = \left(\frac{l}{2}\right) mg - l R \quad (3)$$

solve (1) for R_x :

$$R_x = 0 \quad (1a)$$

solve (3) for R :

$$R = \frac{mg}{2} \quad (3a)$$

solve (2) for R_y :

$$R_y = mg - R$$

sub. (3a) into above eq.

$$R_y = mg - \frac{mg}{2}$$

$$R_y = \frac{mg}{2} \quad (2a)$$

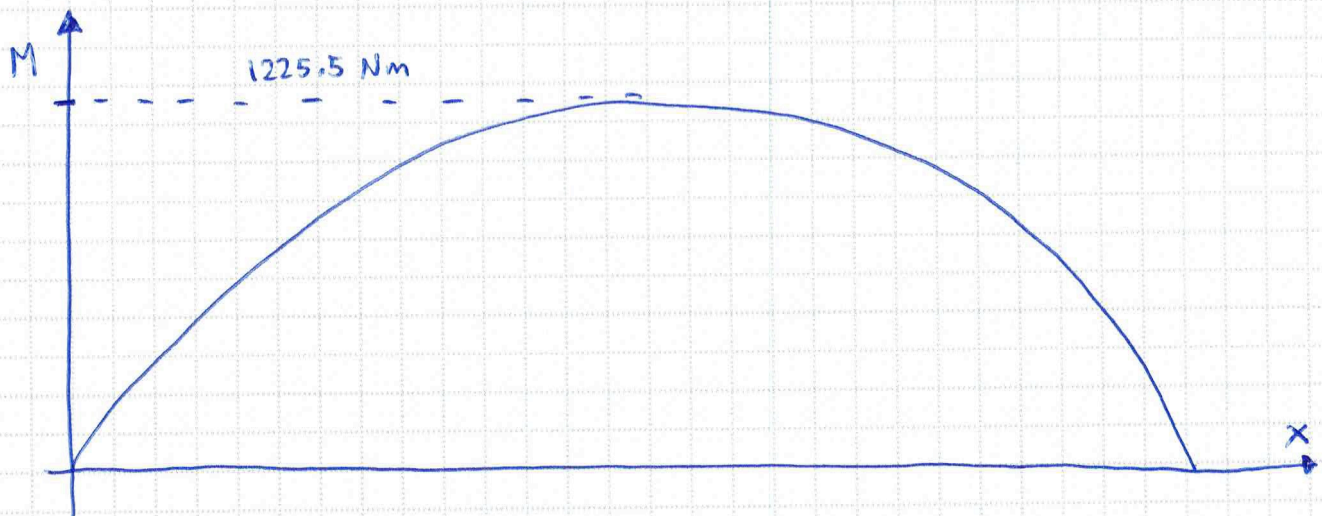
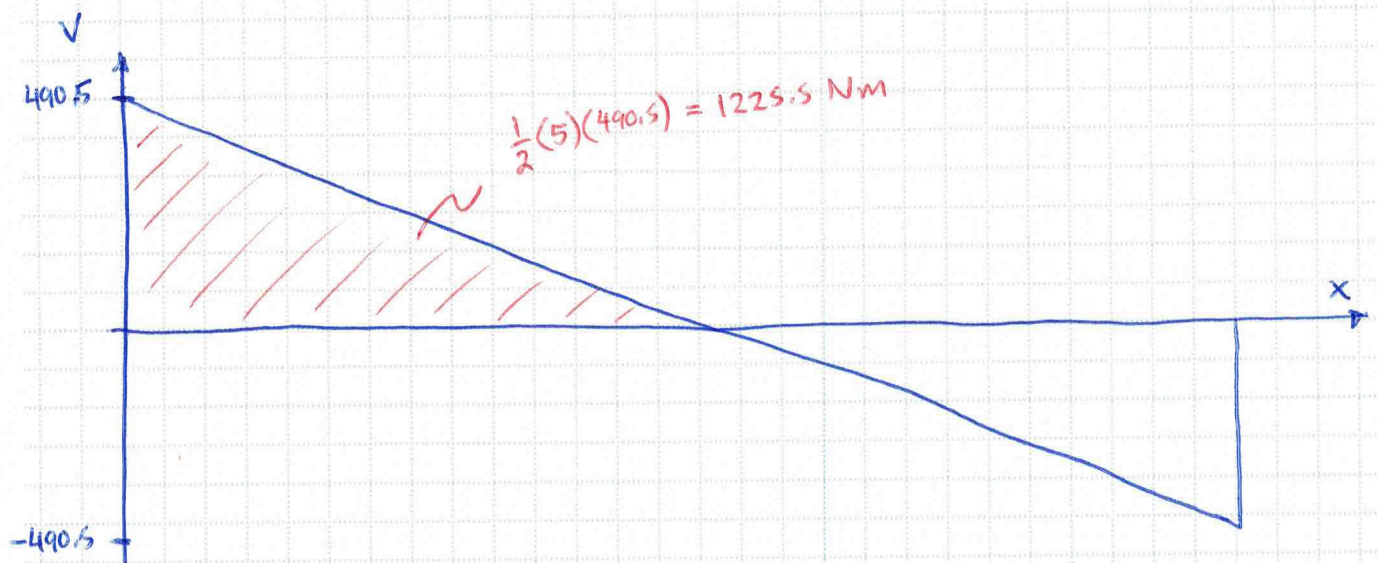
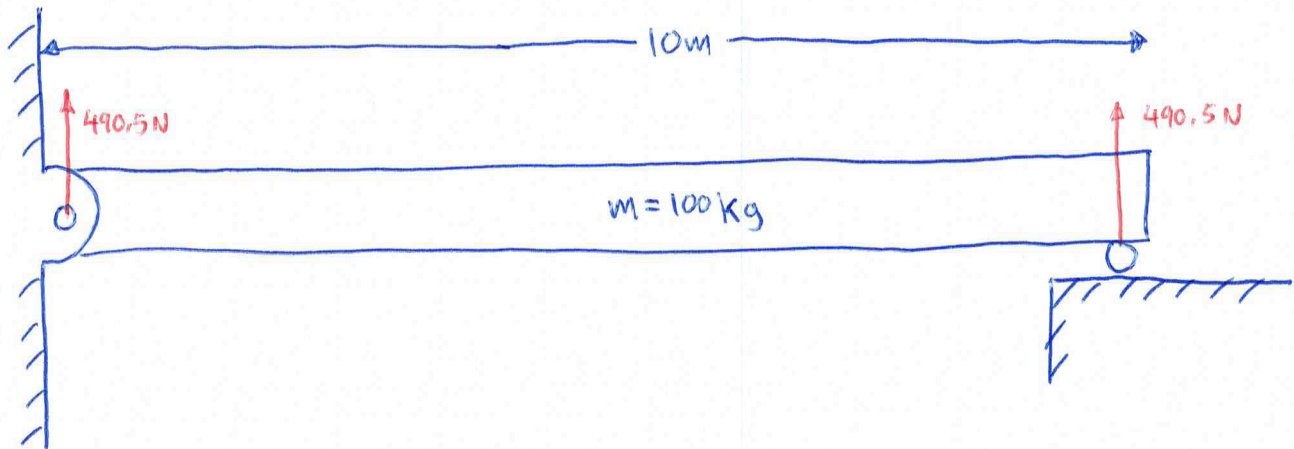
with numbers:

$$R_x = 0$$

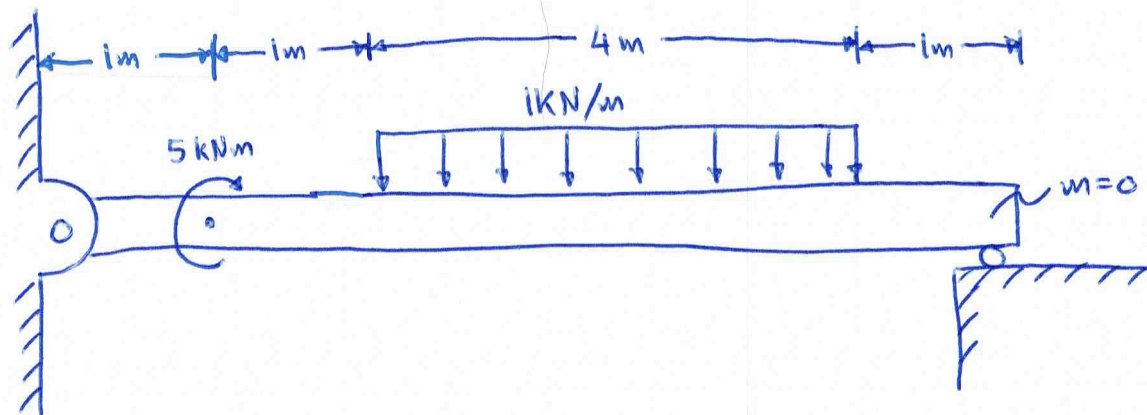
$$R = \frac{(100)(9.81)}{2} = 490.5 \text{ N}$$

$$R_y = \frac{(100)(9.81)}{2} = 490.5 \text{ N}$$

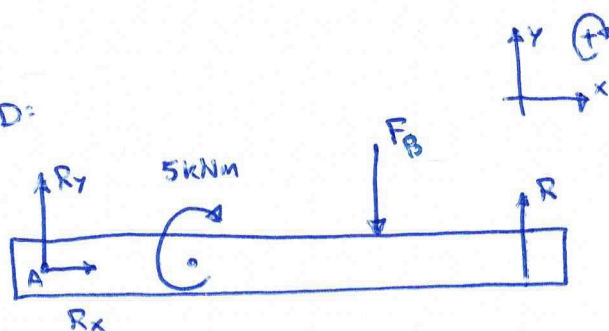
Draw the shear and bending moment diagrams for



Determine the shear, axial and bending moment equations for



FBD:



$$F_B = (4)(1) = 4 \text{ kN}$$

$$x_B = \left(\frac{1}{2}\right)(4) = 2 \text{ m}$$

Newton's laws

$$\sum F_x = m a_x = R_x \quad (1)$$

$$\sum F_y = m a_y = R_y - F_B + R \quad (2)$$

$$\sum M = I_{xx} \ddot{\theta} = 5000 + (2)(4)(F_B) - 7R \quad (3)$$

Solve (1) for R_x :

$$R_x = 0$$

Solve (3) for R :

$$R = \frac{1}{7} (5000 + 4[4000]) = 3000 \text{ N}$$

Solve (2) for R_y :

$$R_y = F_B - R = [4000] - [3000] = 1000 \text{ N}$$

Draw the shear and bending moment diagrams for

