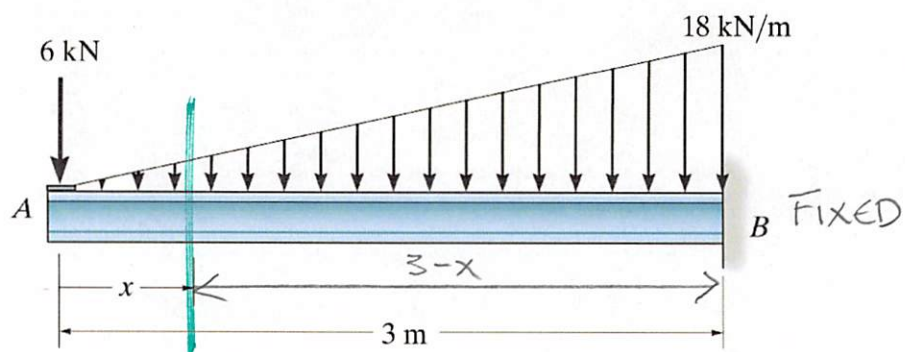


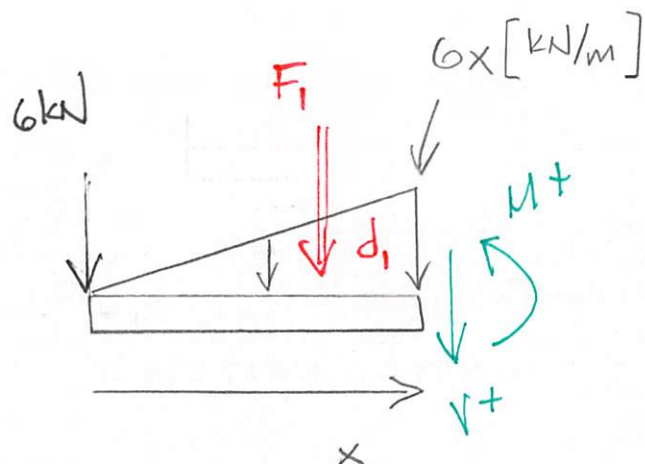
Example 4b-1 - Determine the internal shear and bending moment as a function of x .



$$W = Ax + B$$

$$A = \text{SLOPE} = \frac{18 \text{ kN/m}}{3 \text{ m}} = 6 \text{ kN/m}^2$$

$$0 \leq x \leq 3 \text{ m}$$



$$\sum M_{\text{cut}} = 0 = M + 3x^2 \left(\frac{x}{3} \right) + 6 \text{ kN}(x)$$

$$M = [-x^3 - 6x] \text{ kNm}$$

$$M(x=0) = 0 \quad \checkmark$$

$$M(x=3) = -45 \text{ kNm}$$

$$\sum F_y = 0 = -V - 3x^2 - 6 \text{ kN}$$

$$V = [-3x^2 - 6] \text{ kN}$$

$$V(x=0) = -6 \text{ kN} \quad \checkmark$$

$$V(x=3 \text{ m}) = -33 \text{ kN}$$

$$F_1 = \frac{1}{2}(x) 6x = 3x^2$$

$$d_1 = \frac{1}{3}x$$

$$\frac{dM}{dx} = V$$