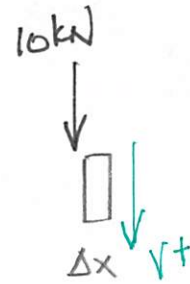
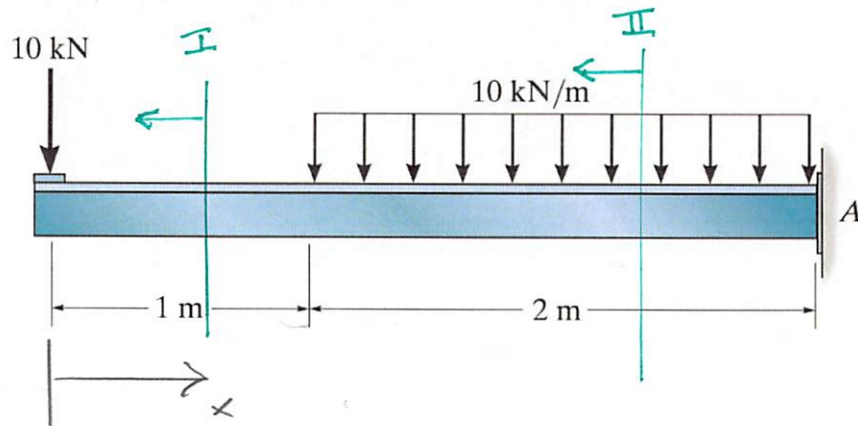


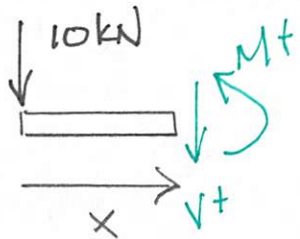
Example 4b-3 - Determine the internal shear and bending moment as a function of x .



$$+\uparrow \sum F_y = 0 = -V - 10 \text{ kN}$$

$$V = -10 \text{ kN}$$

① $0 \leq x \leq 1 \text{ m}$



$$+\circlearrowleft \sum M_{\text{cut}} = 0 = M + 10 \text{ kN} x$$

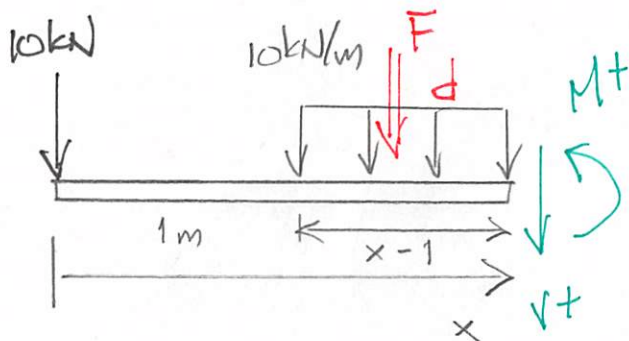
$$+\uparrow \sum F_y = 0 = -V - 10 \text{ kN}$$

$$\underline{\underline{M_I = [-10x] \text{ kNm}}}$$

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

$$\underline{\underline{V_I = -10 \text{ kN}}}$$

② $1 \leq x \leq 3 \text{ m}$



$$+\circlearrowleft \sum M_{\text{cut}} = 0 = M + 5(x-1)^2 + 10x$$

$$\underline{\underline{M_{II} = [-5(x-1)^2 - 10x] \text{ kNm}}}$$

$$M_I(x=1) = M_{II}(x=1) \quad \checkmark$$

$$+\uparrow \sum F_y = 0 = -V - (x-1)10 - 10 \text{ kN}$$

$$\underline{\underline{V_{II} = [-10(x-1) - 10] \text{ kN}}}$$

$$V_I(x=1) = V_{II}(x=1) \quad \checkmark$$

$$F = (x-1)10$$

$$d = \frac{1}{2}(x-1)$$