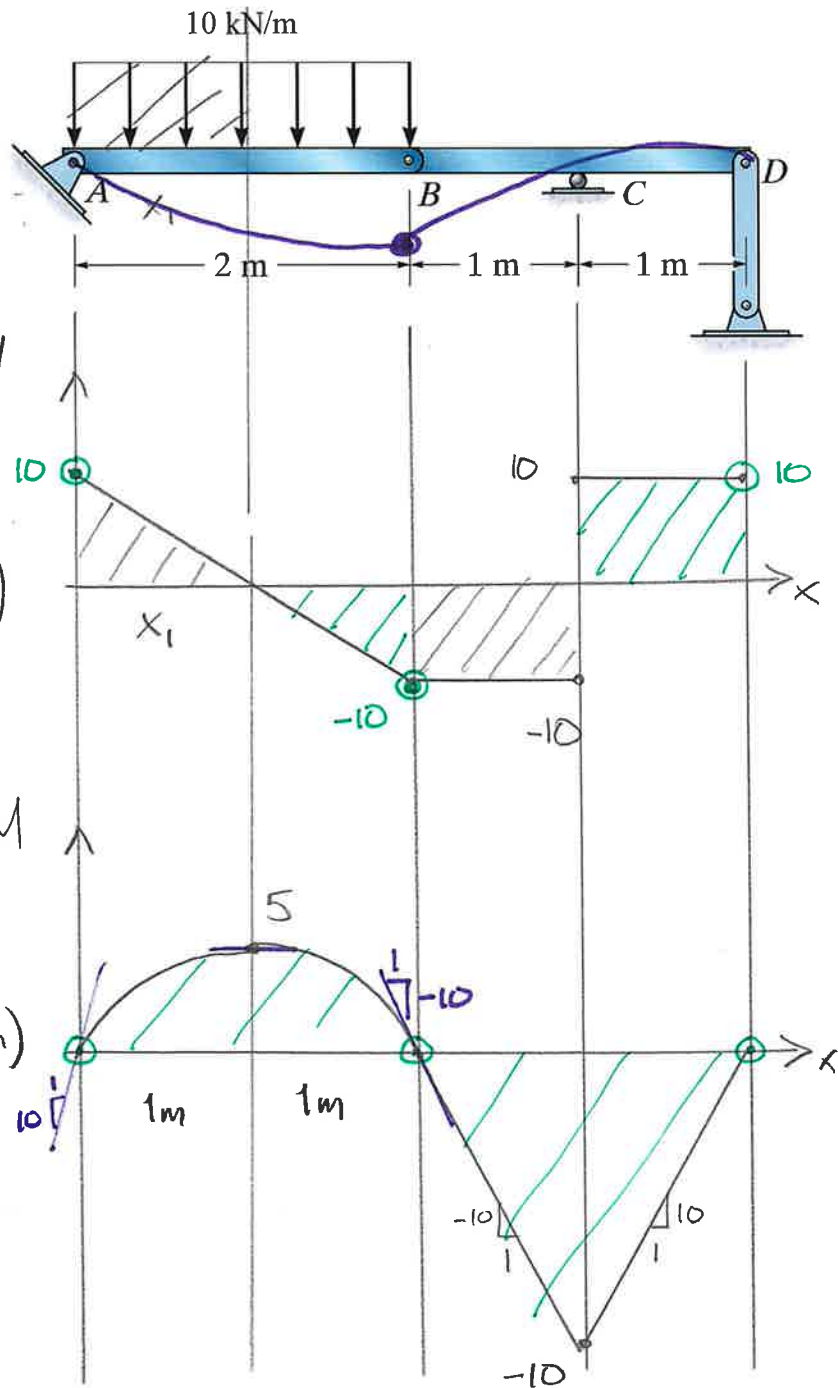


Example 4c-8 – Construct the shear force and bending moment diagrams.



FBD AB



$$\sum M_B = 0 = 20 \text{ kN}(1 \text{ m}) - V_A(2 \text{ m})$$

$$V_A = 10 \text{ kN}$$

$$\sum F_y = 0 = V_A - V_B - 20 \text{ kN}$$

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

$$\Delta V = \int w dx \quad \frac{dV}{dx} = w$$

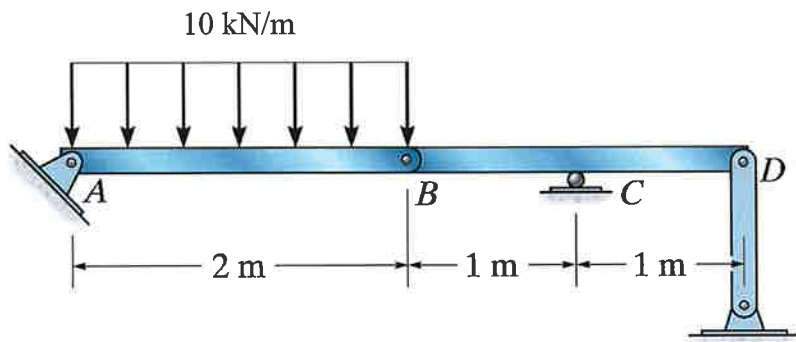
$$\Delta V = -10 \text{ kN} = \int w dx = -10 x_1$$

$$x_1 = 1$$

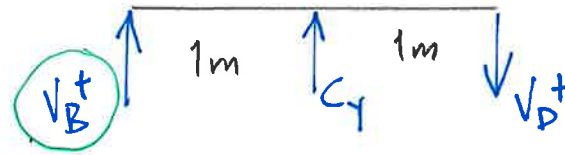
$$\Delta M = \int V dx \quad \frac{dM}{dx} = V$$

$$M_{\text{MAX}} = -10 \text{ kNm @ C}$$

Example 4c-8 – Construct the shear force and bending moment diagrams.



FBD BD



$$\sum M_C = 0 = -V_B(1m) - V_D(1m)$$

$$\underline{V_D = 10kN}$$

$$\sum F_y = 0 = V_B + C_y - V_D$$

$$C_y = V_D - V_B = \underline{20kN}$$

$$\sum M_D = 0 = -C_y(1m) - V_B(2m)$$

$$C_y = -V_B(2m) = -(-10kN)(2m)$$