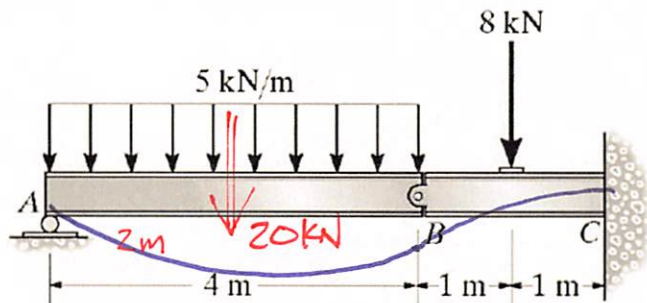
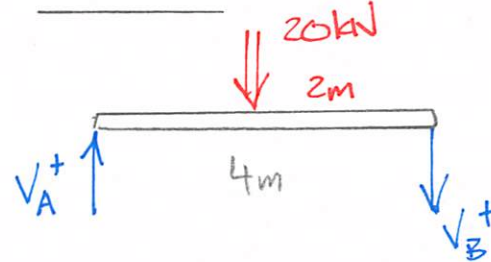


Example 4c-10 – Construct the shear force and bending moment diagrams.



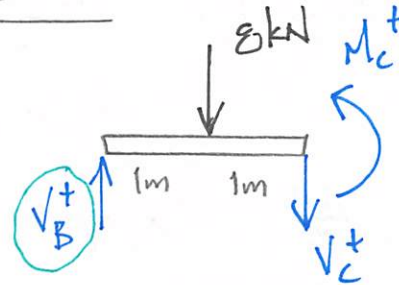
FBD AB



$$\begin{aligned} \sum M_B = 0 &= 20\text{kN}(2\text{m}) - V_A(4\text{m}) \\ V_A &= 10\text{kN} \end{aligned}$$

$$\begin{aligned} \sum F_y = 0 &= V_A - V_B - 20\text{kN} \\ V_B &= -10\text{kN} \end{aligned}$$

FBD BC



$$\begin{aligned} \sum M_C = 0 &= M_C + 8\text{kN}(1\text{m}) - V_B(2\text{m}) \\ M_C &= -28\text{kNm} \end{aligned}$$

$$\begin{aligned} \sum F_y = 0 &= V_B - V_C - 8\text{kN} \\ V_C &= -18\text{kN} \end{aligned}$$

$$\Delta V = P$$

$$\Delta V = \int w dx \quad \frac{dV}{dx} = w \quad -10\text{kN} = -5x_1$$

$$x_1 = 2\text{m}$$

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

