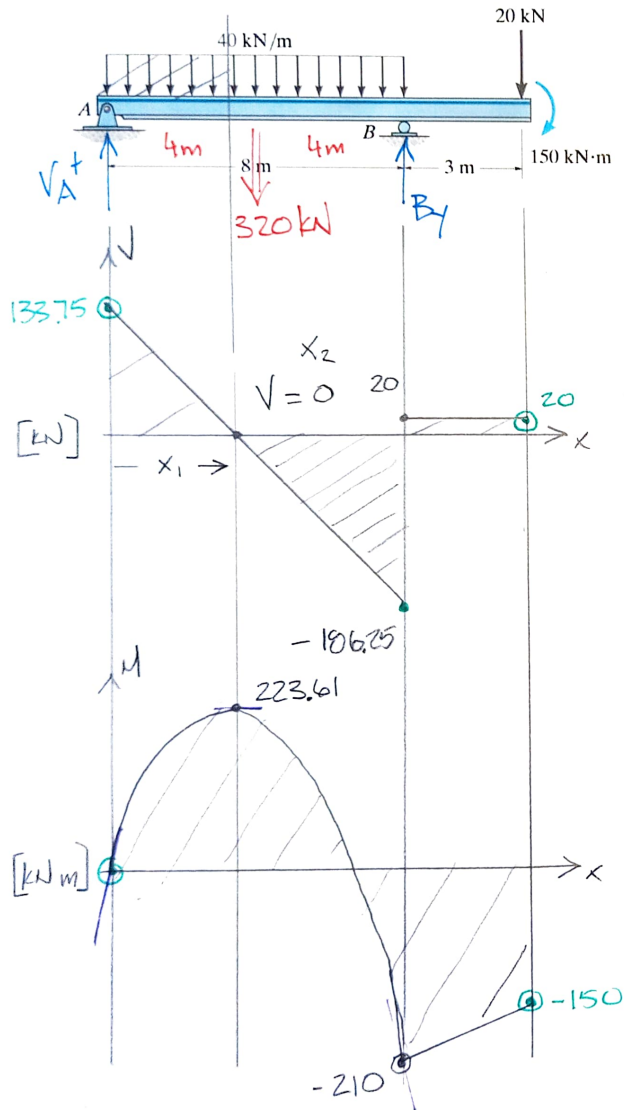


Example 4c-8 – Construct the shear force and bending moment diagrams



$$\sum M_B = 0 = -150 \text{ kN}\cdot\text{m} - 20 \text{ kN}(3 \text{ m}) + 320 \text{ kN}(4 \text{ m}) - V_A(8 \text{ m})$$

$$V_A = 133.75 \text{ kN}$$

$$\sum F_y = 0 = V_A + B_y - 320 \text{ kN} - 20 \text{ kN}$$

$$B_y = 206.25 \text{ kN}$$

FBD RIGHT END

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

$$V = 20 \text{ kN}$$

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

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

$$\Delta V = -133.75 \text{ kN}\cdot\text{m}$$

$$\int w dx = -40x, \text{ kN}\cdot\text{m}$$

$$M_{\text{MAX}} = 223.61 \text{ kN}\cdot\text{m} @ x_1$$

$$x_1 = \frac{133.75}{40} = 3.34 \text{ m}$$

$$x_2 = 4.66 \text{ m}$$