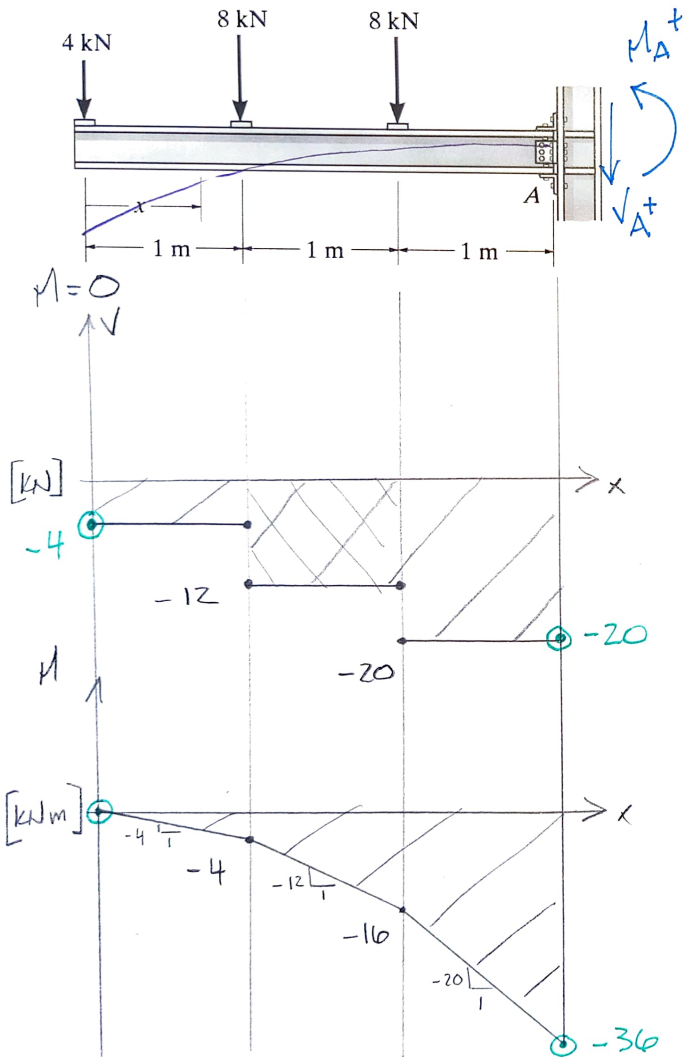


Example 4c-2 – Construct the shear force and bending moment diagrams.



$$\sum M_A = 0 = M_A + 8kN(1m + 2m) + 4kN(3m)$$

$$M_A = -36 kNm$$

$$\sum F_y = 0 = -V_A - 8kN - 8kN - 4kN$$

$$V_A = -20 kN$$

FBD FREE END

A small rectangular segment of the beam is shown with a downward point load of 4 kN and a downward shear force V on its right face. The length of the segment is Δx . The equilibrium equation is:

$$\sum F_y = 0 = -V - 4kN$$

$$V = -4 kN$$

$$\Delta V = P$$

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

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

$$M_{MAX} = -36 kNm @ A$$