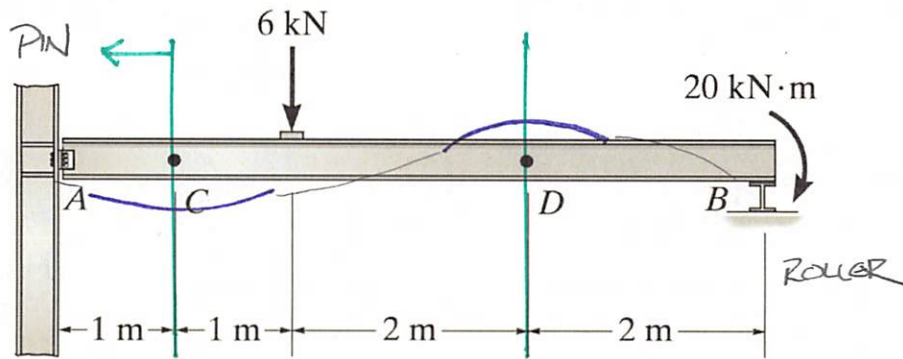
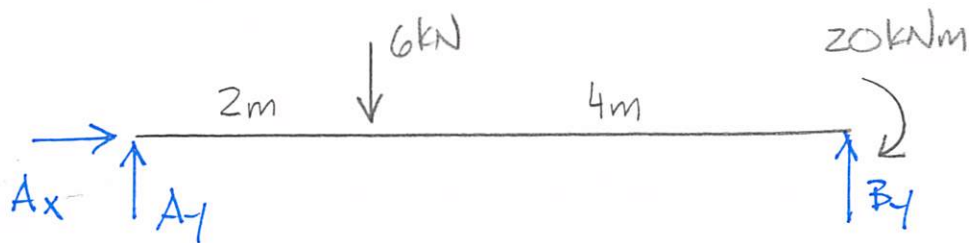


Example 4a-1 - Determine the internal shear and moment in the cantilever beam shown at a section passing through points C and D.

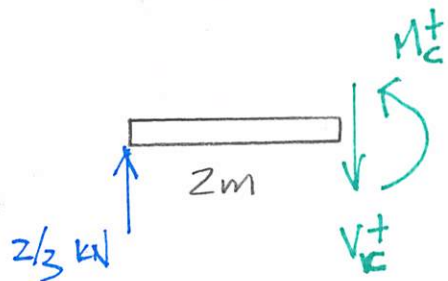


$$\sum M_B = 0 = -20 \text{ kN}\cdot\text{m} + 6 \text{ kN}(4 \text{ m}) - A_y(6 \text{ m})$$

$$A_y = \frac{2}{3} \text{ kN}$$



SECTION AC



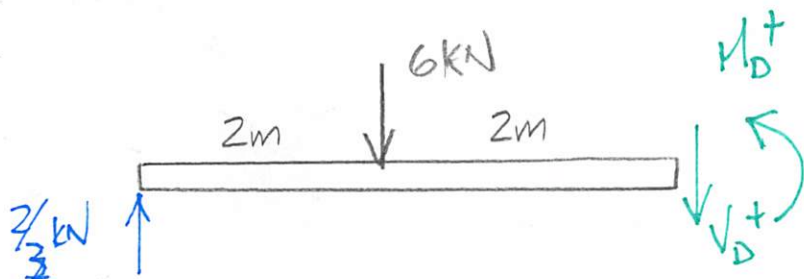
$$\sum M_{\text{cut}} = 0 = M_C - \frac{2}{3} \text{ kN}(2 \text{ m})$$

$$+\uparrow \sum F_y = 0 = -V_C + \frac{2}{3} \text{ kN}$$

$$M_C = \frac{4}{3} \text{ kN}\cdot\text{m}$$

$$V_C = \frac{2}{3} \text{ kN}$$

SECTION ACD



$$\sum M_{\text{cut}} = 0 = M_D + 6 \text{ kN}(2 \text{ m}) - \frac{2}{3} \text{ kN}(4 \text{ m})$$

$$M_D = -9.33 \text{ kN}\cdot\text{m}$$

$$+\uparrow \sum F_y = 0 = -V_D - 6 \text{ kN} + \frac{2}{3} \text{ kN}$$

$$V_D = -5.33 \text{ kN}$$