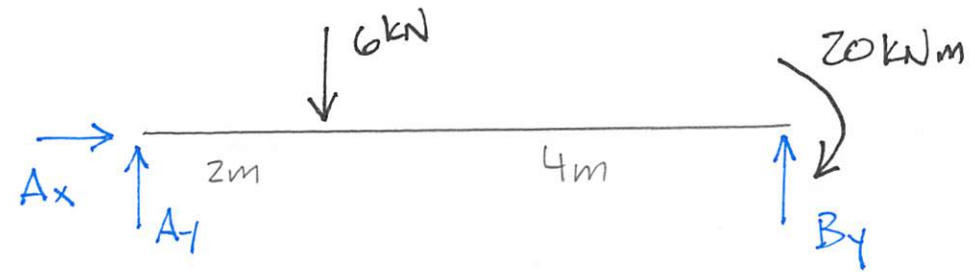
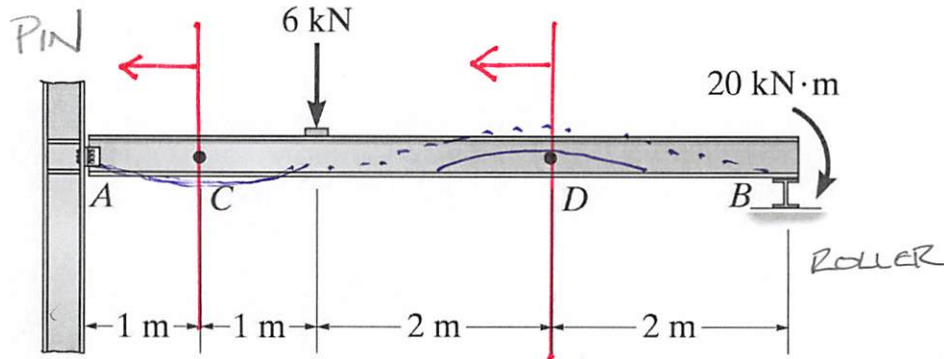


Example 4a-1 - Determine the internal shear and moment in the beam shown at a section passing through points C and D.

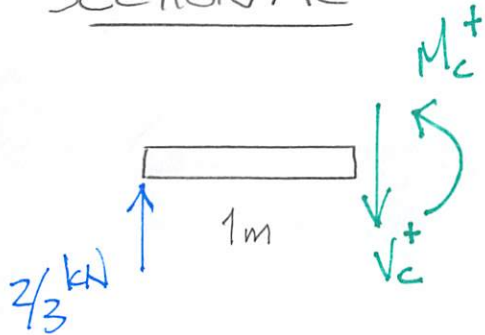


$$\sum \circlearrowleft M_B = 0 = -20 \text{ kN}\cdot\text{m} + 6 \text{ kN}(4 \text{ m}) - A_y(6 \text{ m})$$

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

$$\sum \rightarrow F_x = 0 = A_x$$

SECTION AC

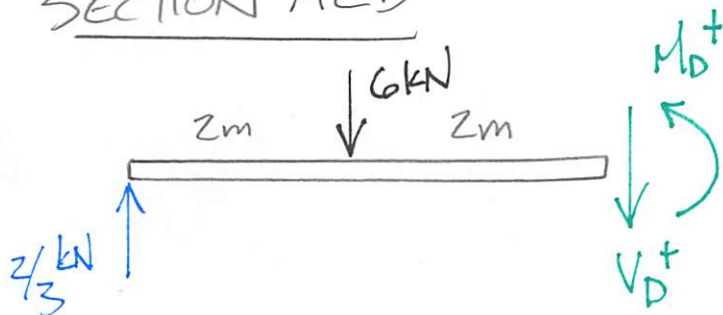


$$\sum \circlearrowleft M_{cut} = 0 = M_c - \frac{2}{3} \text{ kN}(1 \text{ m}) \quad \underline{M_c = \frac{2}{3} \text{ kN}\cdot\text{m}}$$

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

$$\underline{V_c = \frac{2}{3} \text{ kN}}$$

SECTION ACD



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

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

$$\sum \uparrow F_y = 0 = -V_D - 6 \text{ kN} + \frac{2}{3} \text{ kN} \quad \underline{V_D = -5.33 \text{ kN}}$$