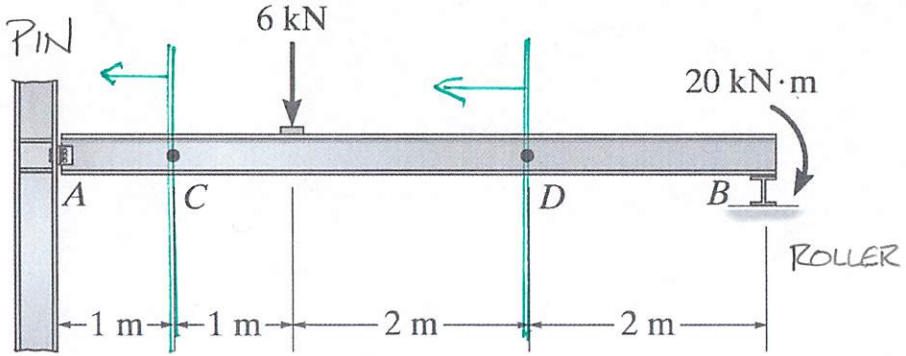
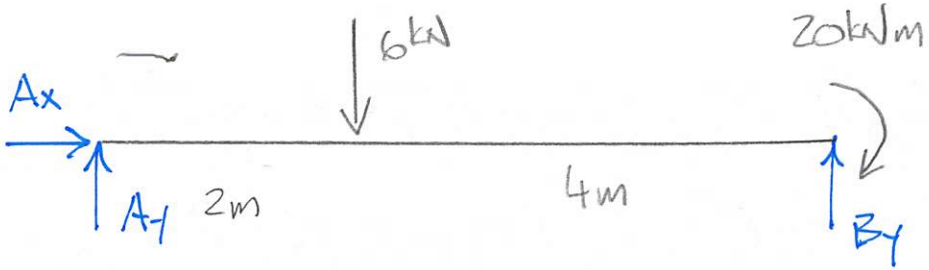
Example 4a-1 - Determine the internal shear and moment in the cantilever beam shown above at a section passing through points *C* and *D*.



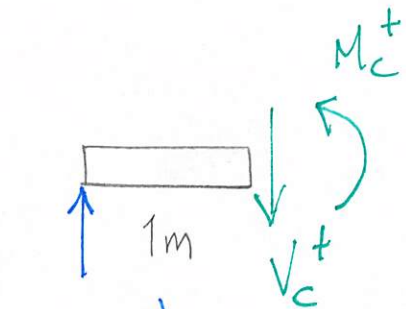
$$\circlearrowleft^{+}\Sigma M_B = 0 = -20\,kN\cdot m + 6\,kN(4\,m) - A_y(6\,m)$$

$$A_y = 0.67\,kN$$

$$\xrightarrow{+}\Sigma F_x = 0 = A_x$$



FBD AC



$$\circlearrowleft^{+}\Sigma M_{CUT} = 0$$

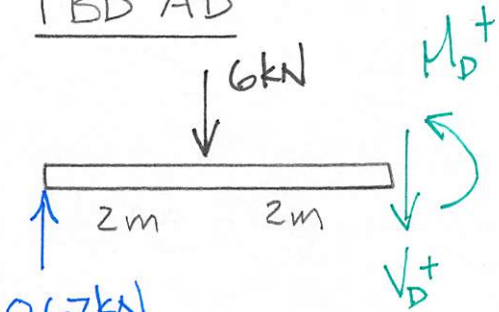
$$= M_C - 0.67\,kN(1\,m)$$

$$M_C = 0.67\,kN\cdot m$$

$$+\uparrow\Sigma F_y = 0 = -V_C + 0.67\,kN$$

$$V_C = 0.67\,kN$$

FBD AD



$$V_D = -5.33\,kN$$

$$\circlearrowleft^{+}\Sigma M_{CUT} = 0 = M_D + 6\,kN(2\,m) - 0.67\,kN(4\,m)$$

$$M_D = -9.33\,kN\cdot m$$

$$+\uparrow\Sigma F_y = 0 = -V_D - 6\,kN + 0.67\,kN$$