Example 4c-8 – Construct the shear force and bending moment diagrams
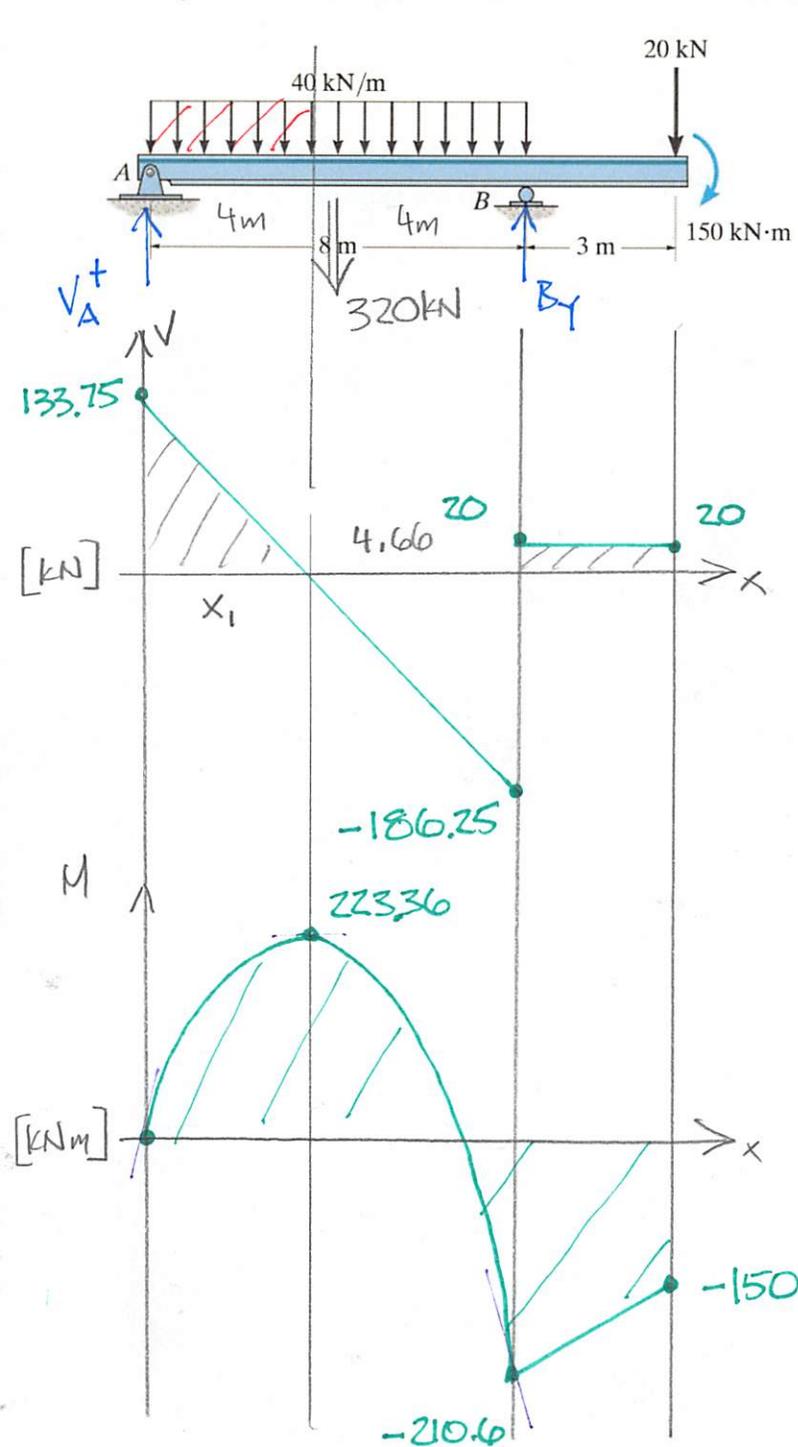
$$\curvearrowright +\sum M_B = 0 = 320\,kN(4m) - 20\,kN(3m)$$
$$- 150\,kN\,m - V_A(8m)$$

$$V_A = 133.75\,kN$$

$$+\uparrow \sum F_y = 0 = V_A + B_y - 320\,kN - 20\,kN$$

$$B_y = 206.25\,kN$$

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

$$\Delta V = -133.75\,kN = \int w\,dx = -40x$$

$$X_1 = \frac{133.75\,kN}{40\,kN/m} = 3.34\,m$$

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

$$M_{MAX} = 223.36\,kN\,m \ @\ x = 3.34\,m$$