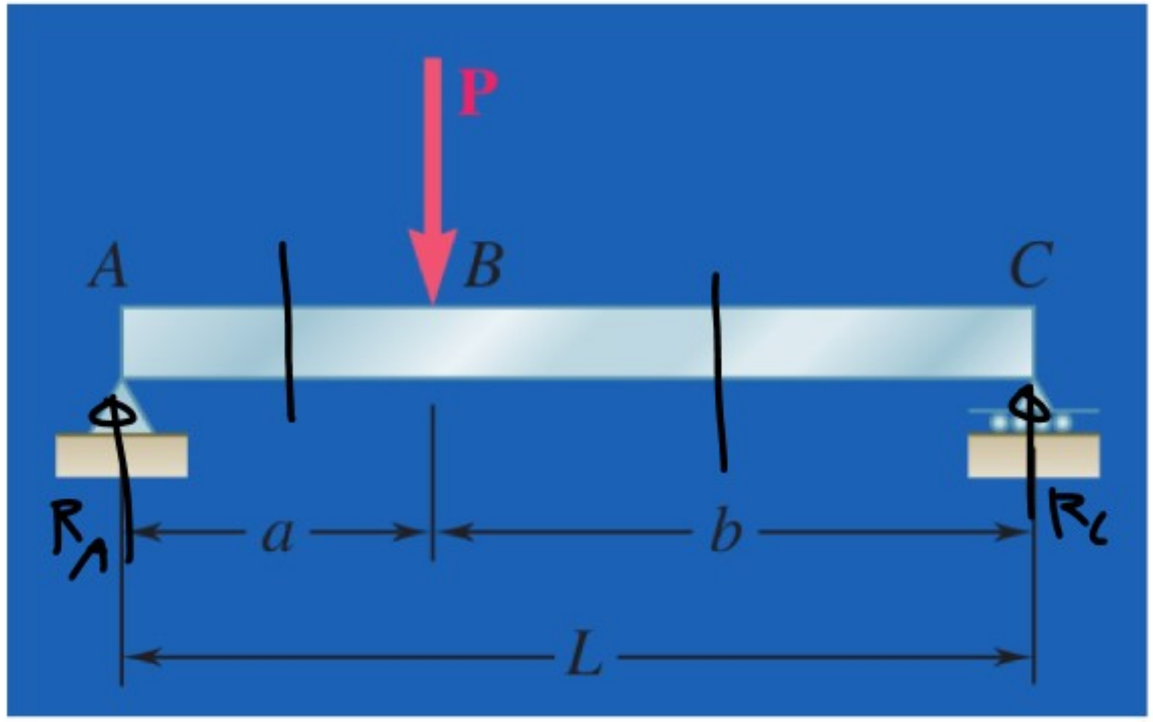
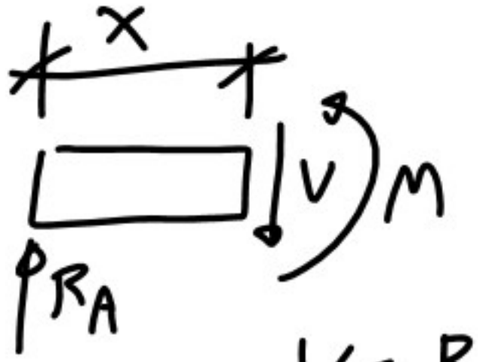




$V = R_A$

$M - xR_A = 0$

$M = xR_A$

$\sum M_A = 0$

$-aP + LR_C = 0$

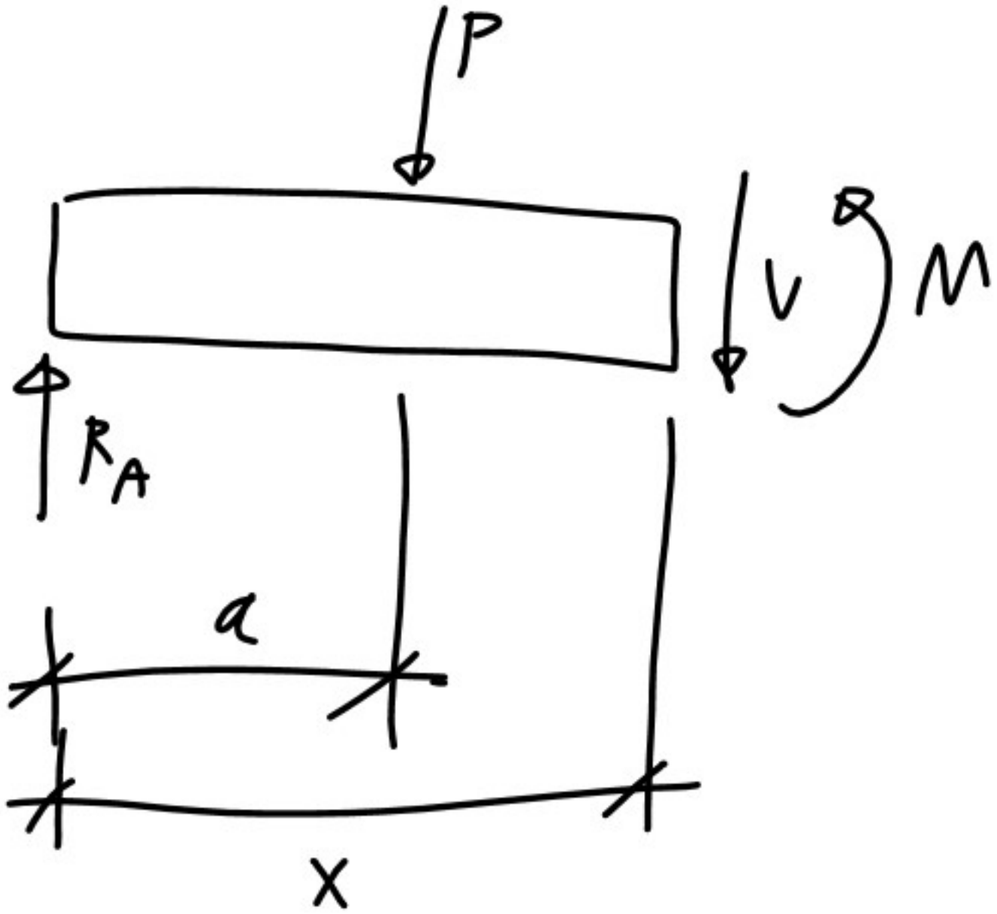
$R_C = \frac{aP}{L}$

$\sum F_y = 0$

$R_A - P + R_C = 0$

$R_A = P - R_C = P - \frac{aP}{L}$

$= P\left(1 - \frac{a}{L}\right) = P\left(\frac{L-a}{L}\right) = \frac{bP}{L}$



$$\Sigma F_y = 0$$

$$R_A - P - V = 0$$

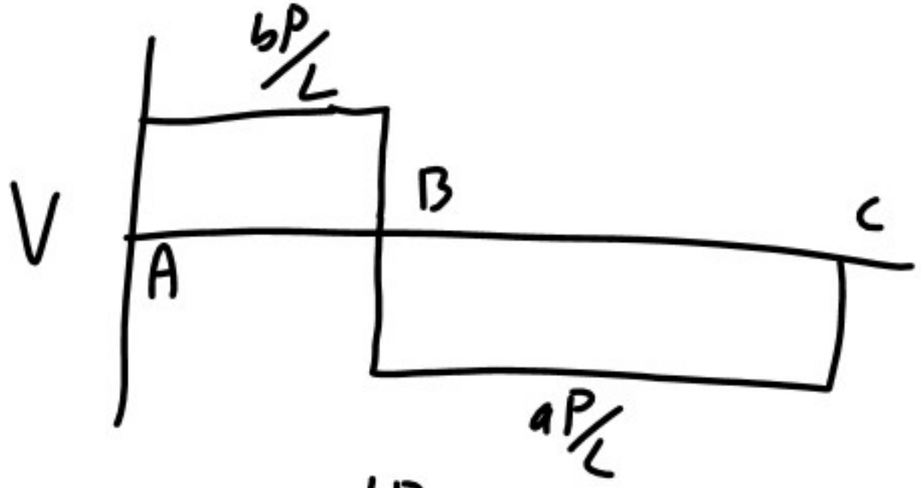
$$V = R_A - P$$

$$= -R_C$$

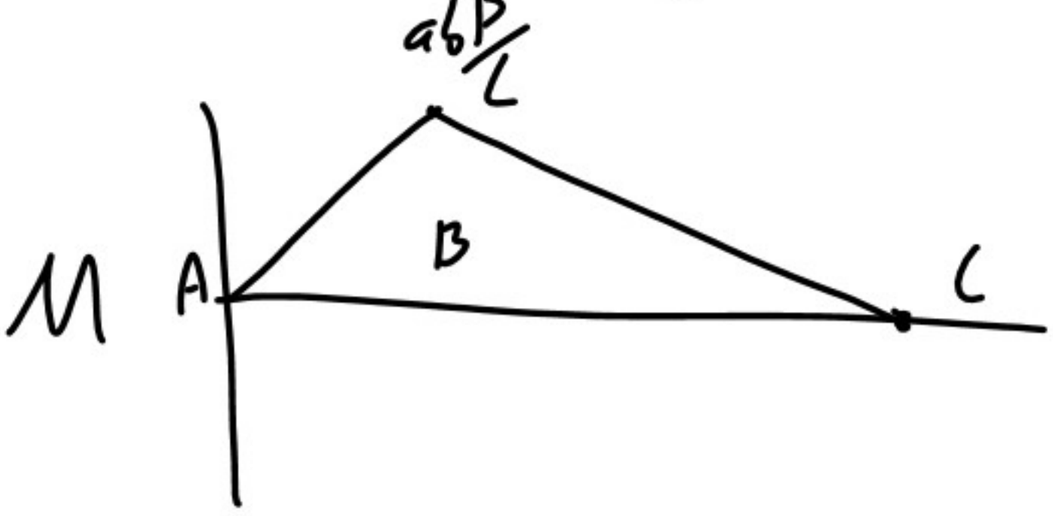
$$\Sigma M = 0$$

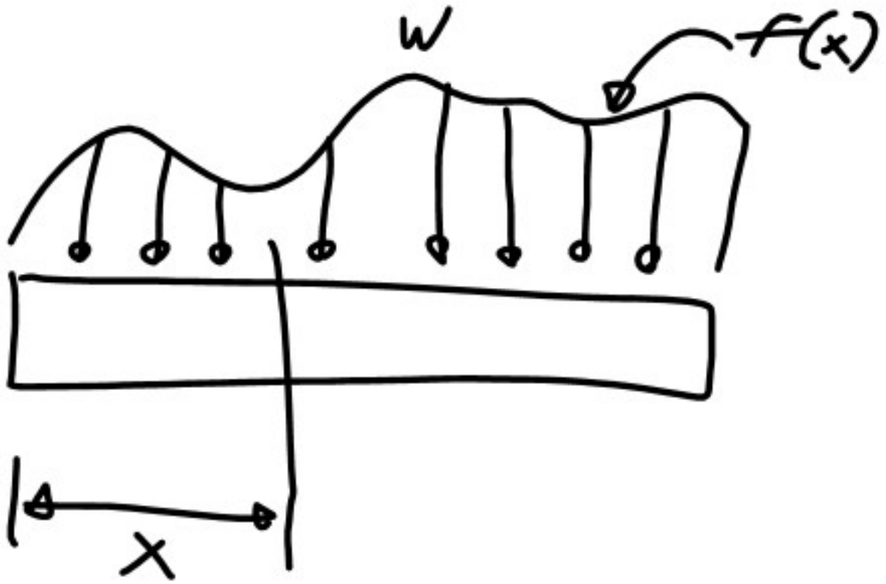
$$M - x R_A + (x-a) P = 0$$

$$M = x R_A - (x-a) P$$



$$\times R_A = \times \frac{bP}{L} = \frac{abP}{L}$$





$$\Sigma F_y = 0$$

$$V + \int_0^x f(x)\,dx = 0$$

$$V = -\int_0^x f(x)\,dx \qquad \Rightarrow \qquad \frac{dV}{dx} = -w$$

$$\Sigma M = 0$$

$$M - \int_0^x x\,f(x)\,dx = 0$$

$$M = \int_0^x x f(x)\,dx$$

$$M = x\int f(x)\,dx - \iint f(x)\,dx\,dx \Big|_0^x$$

$$M = \int_0^x V(x)\,dx \quad \Rightarrow \quad \frac{dM}{dx} = V$$

$$M = \int_0^x x f(x)\,dx$$

$u = x \qquad \frac{dv}{dx} = f(x)$

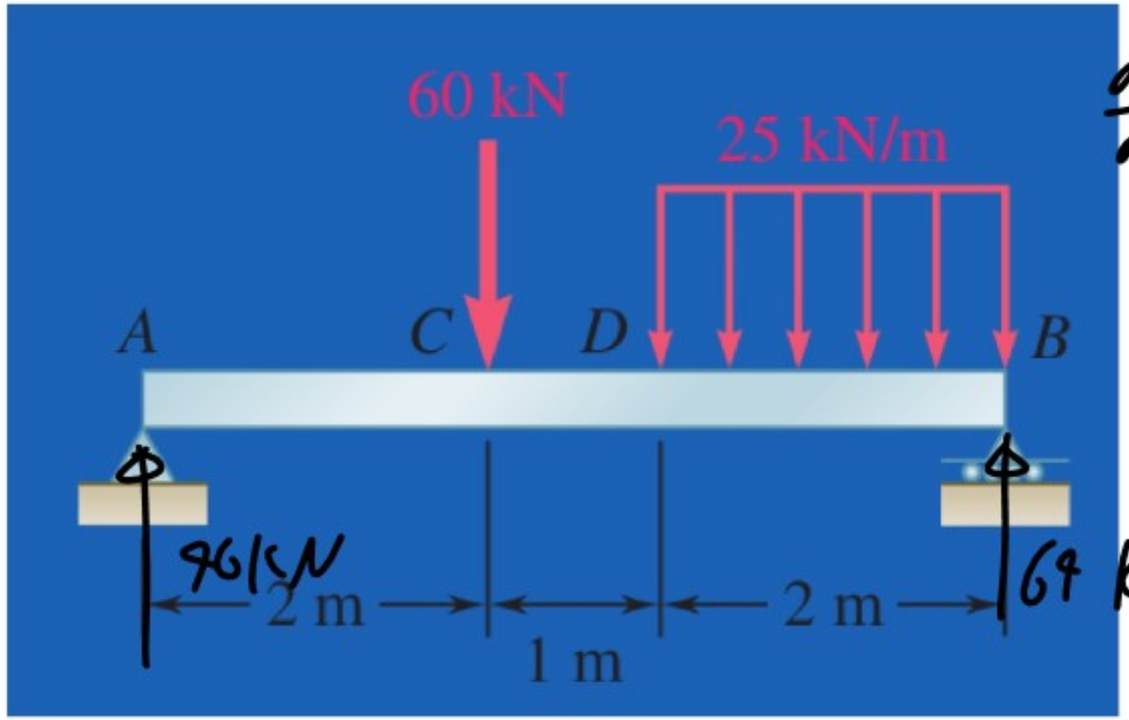
$v = \int f(x)\,dx$

$\frac{du}{dx} = 1$

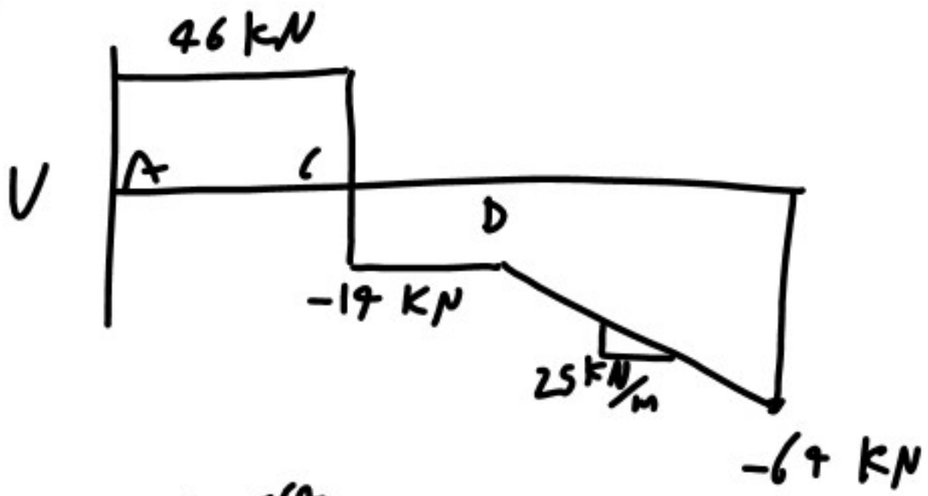
$du = dx$

$$= uv - \int v\,du$$

$$= x\int f(x)\,dx - \int\int f(x)\,dx\,dx$$



$\frac{dV}{dx} = w$



$-25 \cdot 2 - 19 = -69$

Dirac Delta Function

$$\delta(x) = \lim_{\Delta \to 0} \begin{cases} \frac{1}{\Delta} & : -\Delta < x < \Delta \\ 0 & : \text{otherwise} \end{cases}$$

$$\int_{-\infty}^{\infty} \delta(x)\,dx = 1$$

$$\int_{-\infty}^{\infty} 46\,\delta(x)\,dx = 46$$