



$Q = \text{IMAGINARY FORCE}$

For AB

$$M = Px$$

$$\frac{\partial M}{\partial P} = x$$

$$\frac{\partial M}{\partial Q} = 0$$

For BC

$$M = Pa + Qx$$

$$\frac{\partial M}{\partial P} = a$$

$$\frac{\partial M}{\partial Q} = x$$

For Vertical Defl.

$$y_v = \frac{\partial u}{\partial P} = \frac{1}{EI} \left[\int_0^a (Px) x dx + \int_0^b (Pa + Qx) a dx \right]$$

$$= Pa^2 \left(\frac{a}{3} + b \right)$$