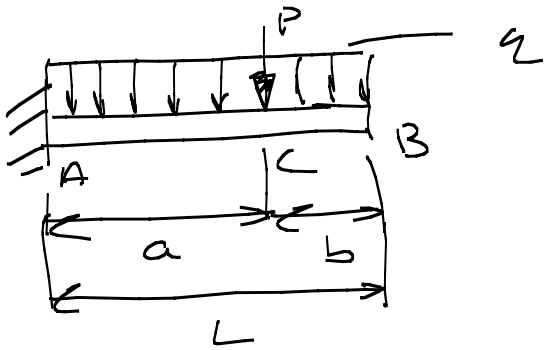
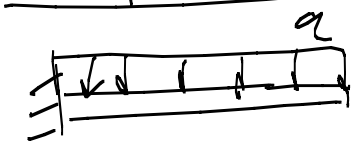
Problem 2

Determine the Deflection at B



Superposition

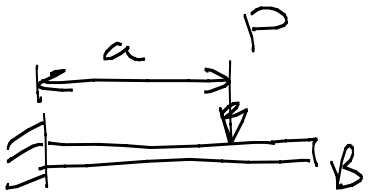


$$V_1 = \frac{-qx^2}{24EI}\left(6L^2 - 4Lx + x^2\right)$$

@B $x = L$

$$V_{B_1} = \frac{-qL^2}{24EI}\left(6L^2 - 4L^2 + L^2\right)$$

$$\boxed{V_{B_1} = -\frac{qL^4}{8EI}}$$



$a \le x \le L$ $\quad V_2 = \frac{-Pa^2}{6EI}(3x - a)$

@B $x = L$

$$\boxed{V_{B_2} = -\frac{Pa^2}{6EI}(3L - a)}$$

$$V_B = -\frac{qL^4}{8EI} - \frac{Pa^2}{6EI}(3L - a) \qquad \delta_B = \frac{qL^4}{8EI} + \frac{Pa^2}{6EI}(3L - a)$$