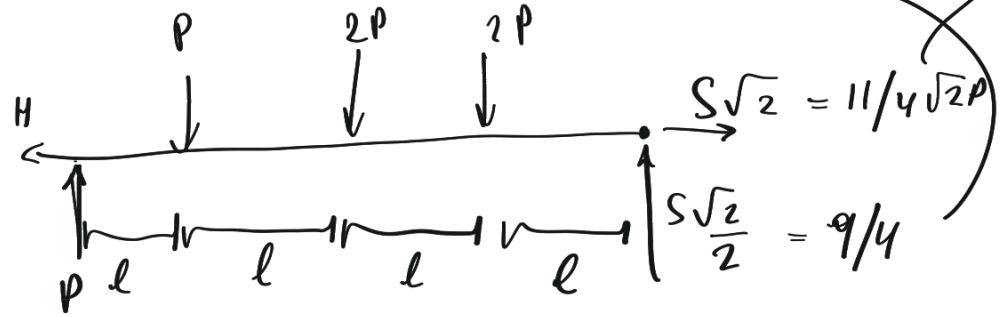
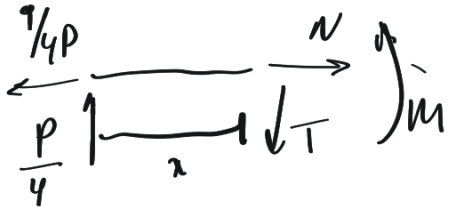
$M_B = 2P \cdot l + 2P \cdot 2l + P \cdot 3l - R \cdot 4l$

$R = \frac{9}{4}P$

Perché $M_A = 0 \Rightarrow S = \frac{11}{4}\sqrt{2}P$



$0 \le x \le l$ $\quad H = \frac{1}{4}P$ $\quad R = \frac{9}{4}P$



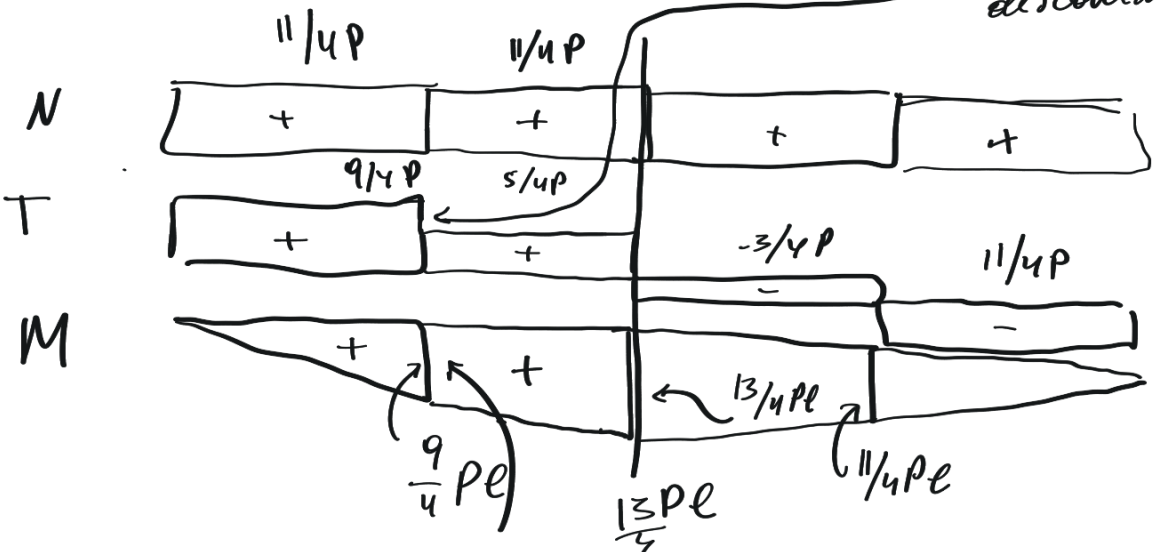
$T = \frac{9}{4}$ $\quad N = \frac{11}{4}P$

$M(x) = \frac{9}{4}Px$

$3l \le x \le 4l$

$0 \le x \le l$ $\quad l \le x \le 2l$ $\quad 2l \le x \le 3l$

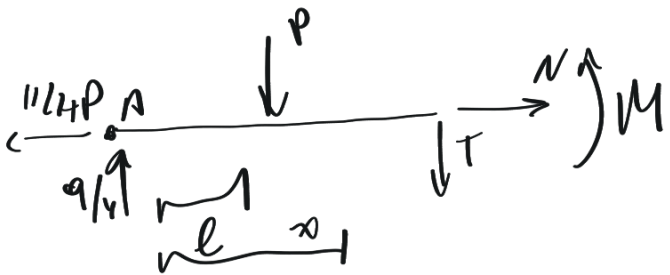
ci deve esser discontinuità nel taglio



Perché se $x = l$ $\quad \frac{5}{4}Pl + Px_0 = \frac{9}{4}Pl$

$l \le x \le 2l$

$N = 11/4\,P$

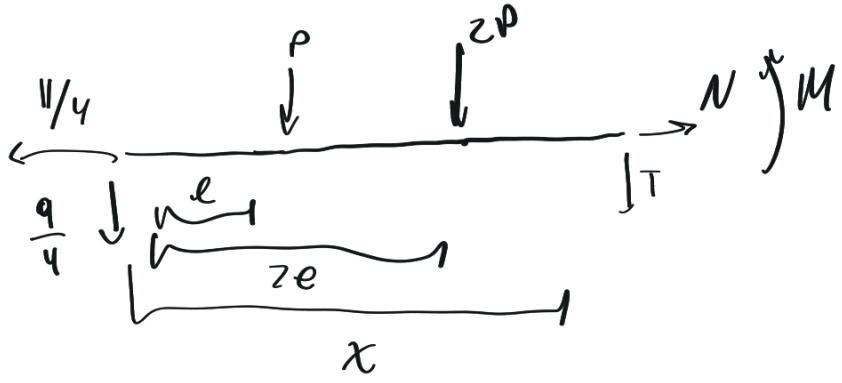


$T + P = \frac{9}{4}P \Rightarrow T = \frac{5}{4}P$

$M(x) = \frac{9}{4}Px - P(x-l) =$

$$M(x) = \frac{5}{4}Px + Pl$$

$2l \le x \le 3l$



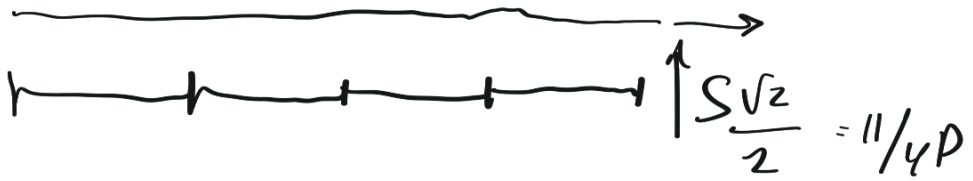
$N = 11/4\ P$

$T = \frac{-3}{4}P$

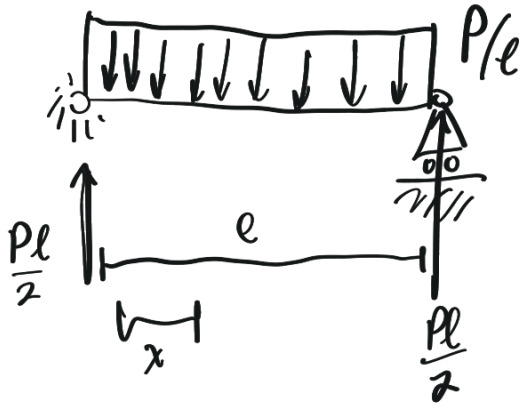
↳ con equilibrio di forze verticali

$$M(x) = \frac{9}{4}Px - P(x-l) - 2P(x-2l) = \frac{-3}{4}Px + 5P$$

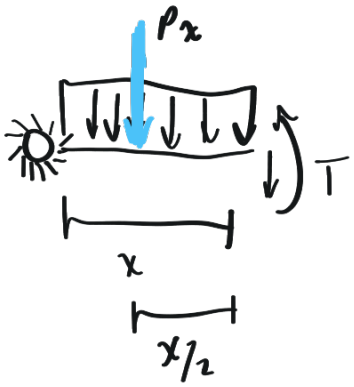
$3l \le x \le 4l$



Altro esempio:



$N = 0$

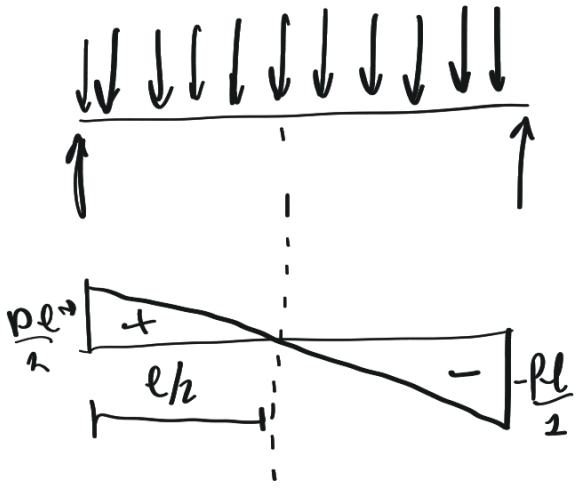


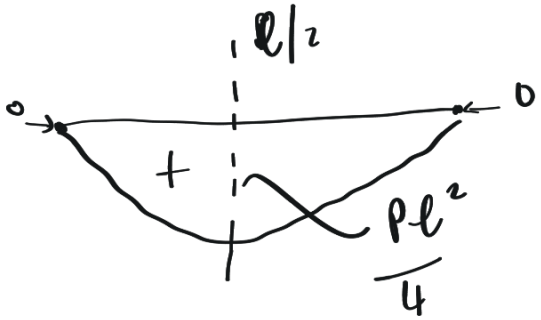
$$T = \frac{P\ell}{2} - Px$$

se $x = 0$ $\quad T = \frac{P\ell}{2}$

se $x = \ell$ $\quad T = -\frac{P\ell}{2}$

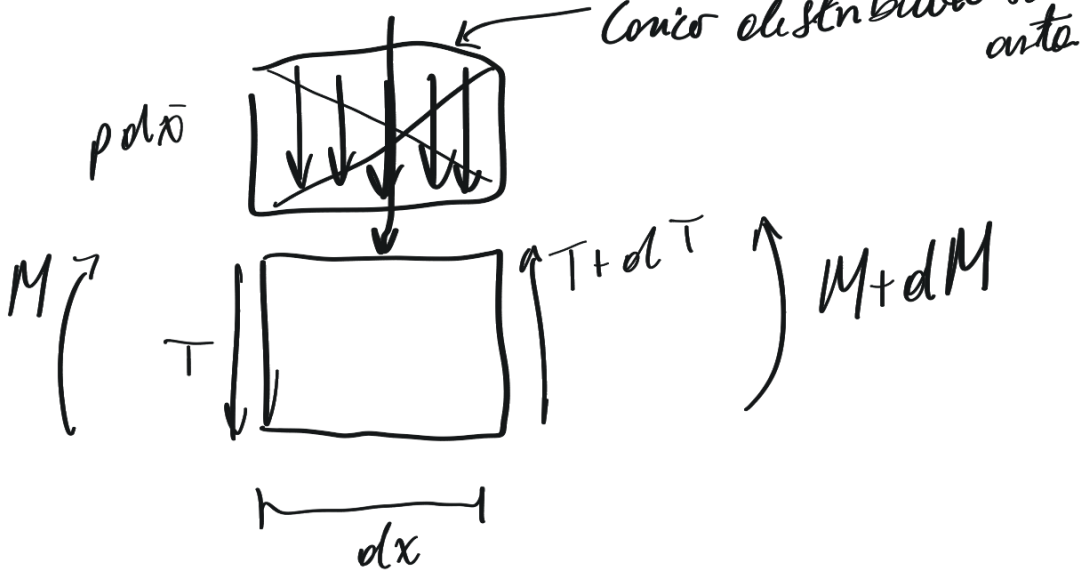
$$M(x) = \frac{P\ell}{2}x - \frac{Px^2}{2}$$





Questo è detto metodo di inerzia

Approccio infinitesimale:



Equilibrio verticale:

$$-T(x) + T(x+dx) - p(x)dx = 0$$

$$-T(x) + T(x) + dT - p(x)dx = 0$$

$$\frac{dT}{dx} = p(x)$$

Equilibrio del Momento

$$T(x)dx + [p(x)dx]\,\frac{dx}{2} - M(x) + M(x+dx) = 0$$

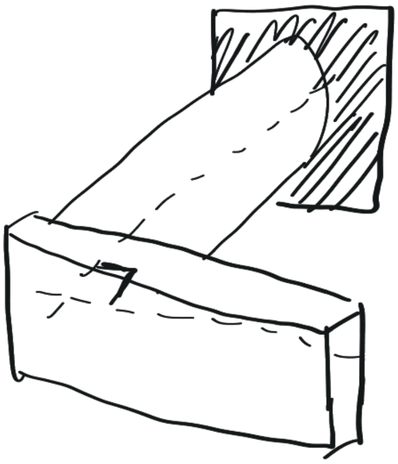
$$T(x)dx + dM = 0$$

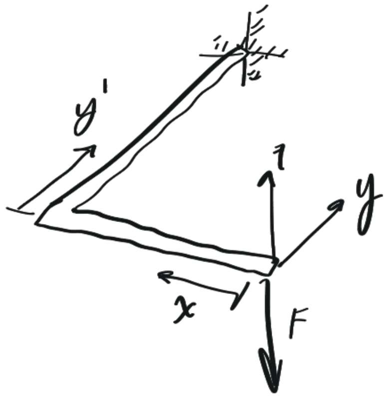
$$\boxed{\frac{dM}{dx} = -T(x)}$$

Esempio 1:

Metodo differenziale → Non importa ora, importerà dopo

Azioni interne Strutture 3D





2D

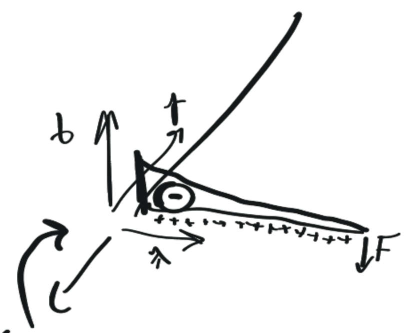
GdL 3

gdv = 3

3D

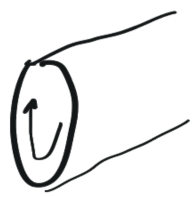
GdL = 6

gdv = 6



$$M_y = -Fb$$

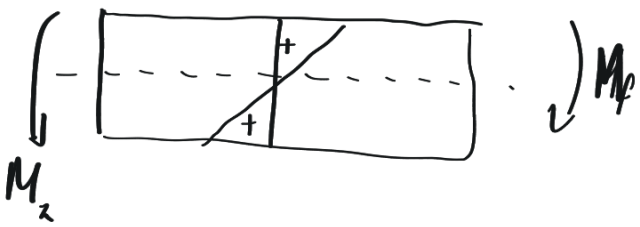
↳ La asta a crea momento flettente su asta b, z



Momento Torcente

La forza F genera un momento flettente su b e un momento torcente su a

↳ dato questo la reazione a ha momento torcente



Azioni Generate in 3D

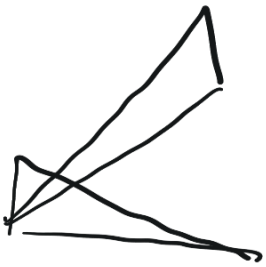
N, normale

T, taglio

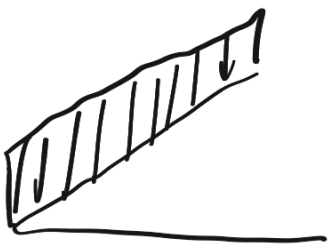
M_{f1}, M_{f2} momento flettente

M_t momento torcente

Momento Flettente



Momento Torcente



Taglio