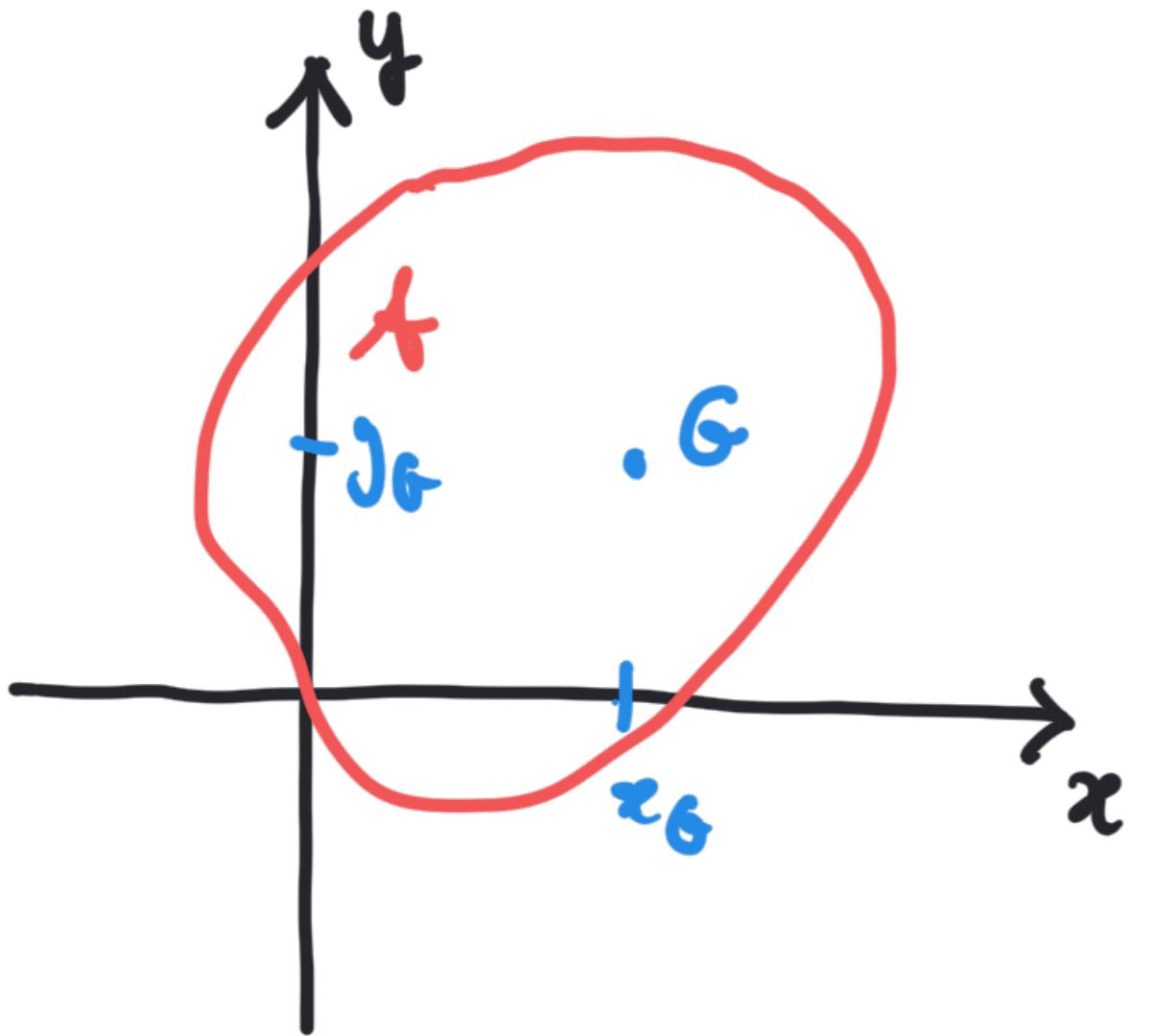


Geometria delle aree



heia

$$A = \int dA$$

$\rightarrow A$

$$S_x = \int y dA \quad S_y = \int x dA$$

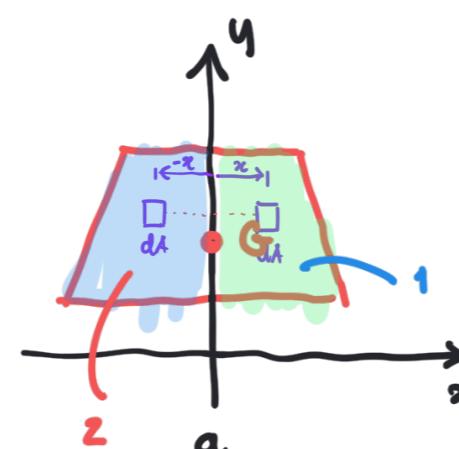
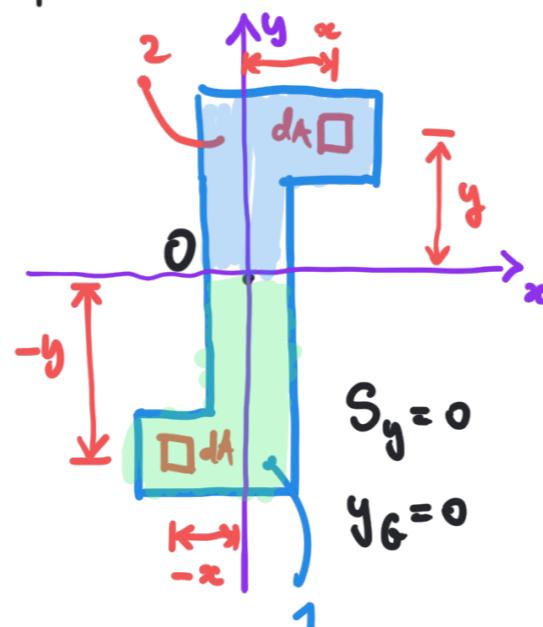
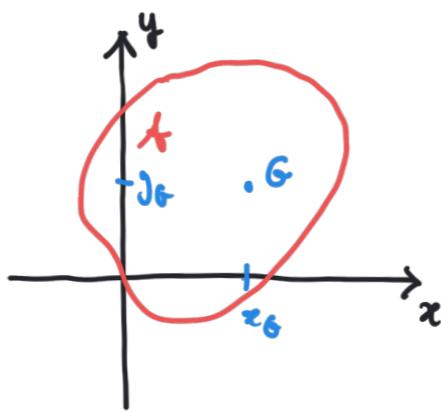
$\uparrow x \quad \uparrow A$

momenti statici

$$x_G = \frac{S_y}{A}$$

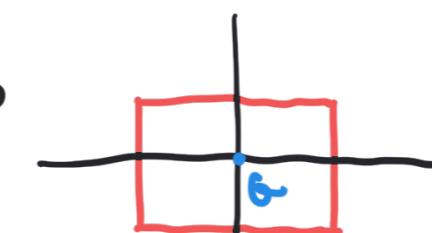
$$y_G = \frac{S_x}{A}$$

$$= \frac{1}{A} \int x dA$$



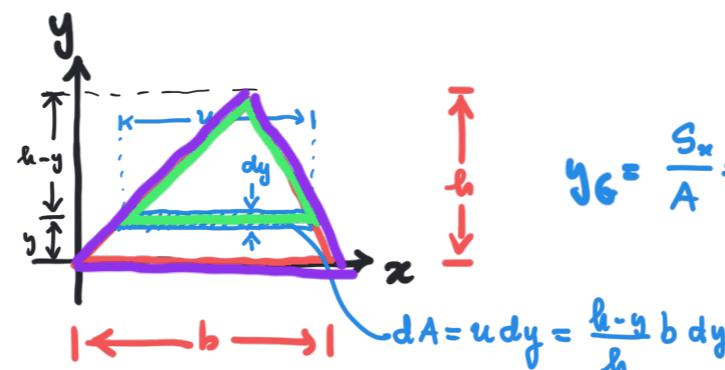
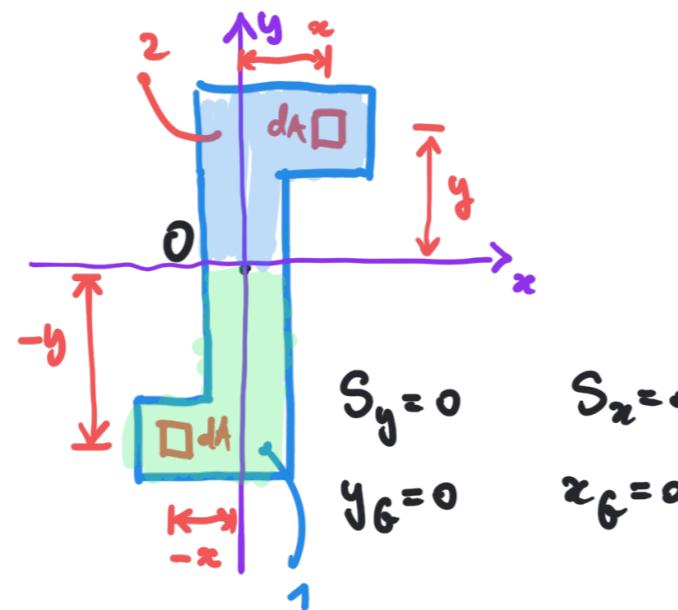
$$\int x dA = 0$$

$x_G = 0$



$$x_G = \frac{S_y}{A} \quad y_G = \frac{S_x}{A}$$

il valore medio delle coordinate  
è 0



$$\frac{u}{b} = \frac{h-y}{h} \quad u = \frac{h-y}{h} b$$

$$S_x = \int y dA = \int_0^h y u dy = \int_0^h y \frac{h-y}{h} b dy = \frac{b}{h} \int_0^h (hy - y^2) dy$$

area

$$A = \int dA$$

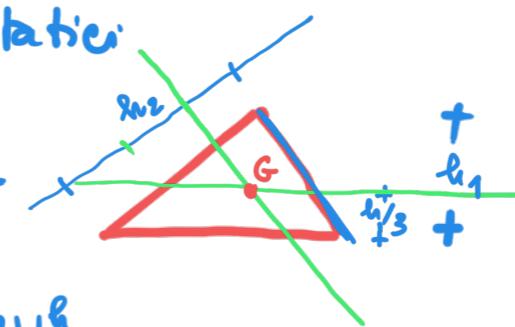
$$S_x = \int y dA \quad S_y = \int x dA$$

momenti statici

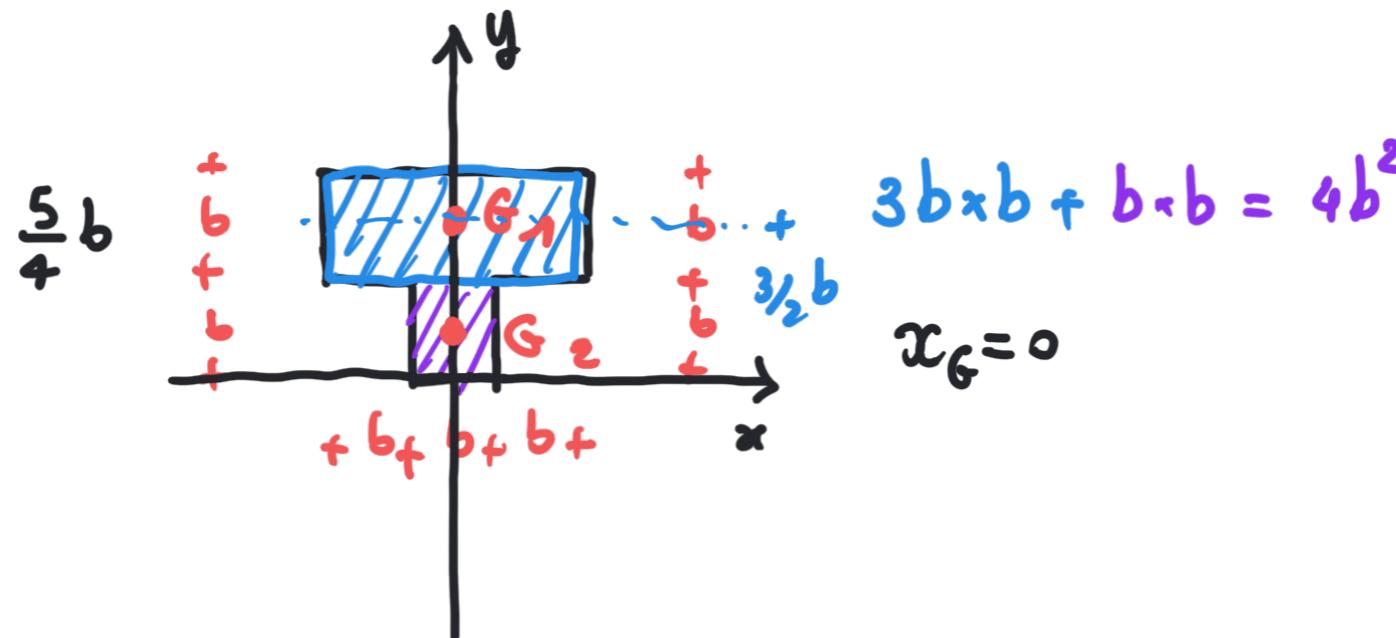
$$y_G = \frac{S_x}{A} = \frac{\frac{1}{6}bh^3}{\frac{1}{2}bh} = \frac{1}{3}h$$

$$\frac{1}{6}bh^2$$

$$\frac{b}{h} \left( \frac{hy^2}{2} - \frac{y^3}{3} \right) \Big|_0^h$$



Ese: Mz. composta  
area, G



area

$$A = \int dA$$

$$S_x = \int y dA \quad S_y = \int x dA$$

$\uparrow$   $\uparrow$

momenti statici

$$y_G = \frac{S_{x_1} + S_{x_2}}{A} = \frac{A_1 y_{G_1} + A_2 y_{G_2}}{A}$$

$$= \frac{A_1}{A} y_{G_1} + \frac{A_2}{A} y_{G_2}$$

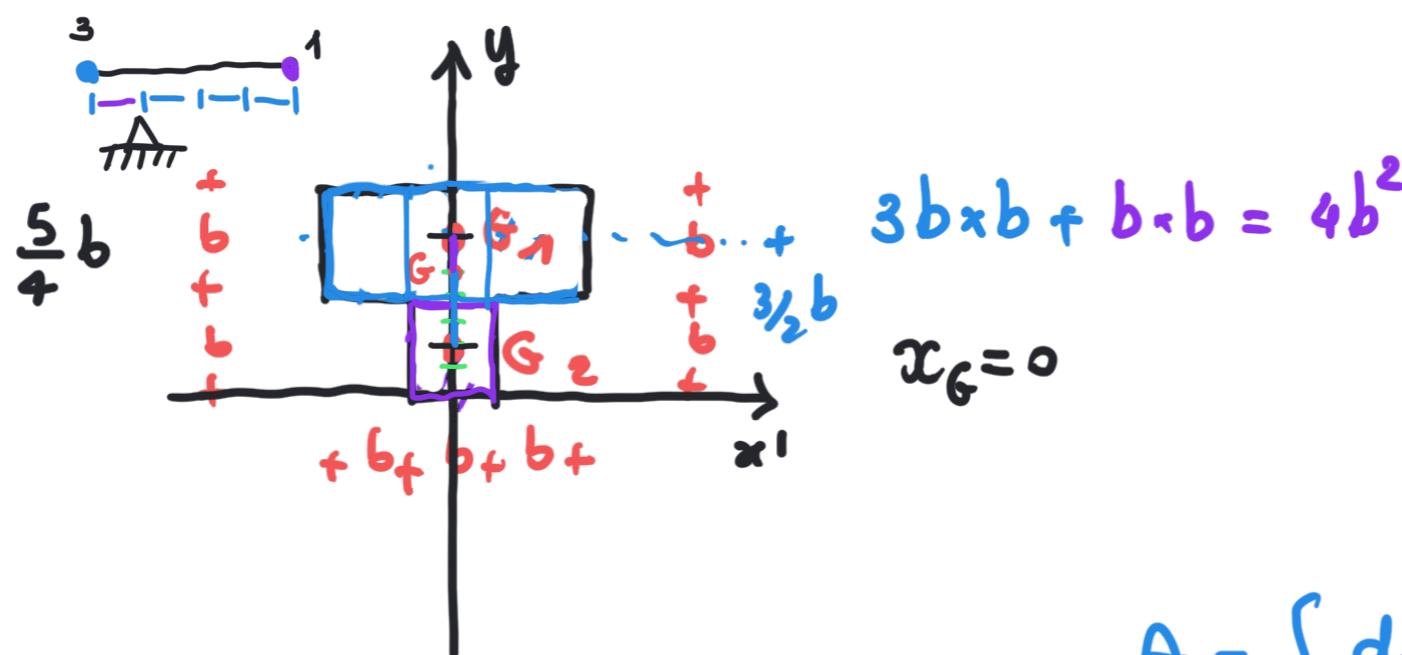
$$= \frac{3}{4} \cdot \frac{3}{2}b + \frac{1}{4} \cdot \frac{b}{2} = \frac{5}{4}b$$

$$y_{G_1} = \frac{S_{x_1}}{A_1}$$

$$S_{x_1} = A_1 y_{G_1}$$

ES:

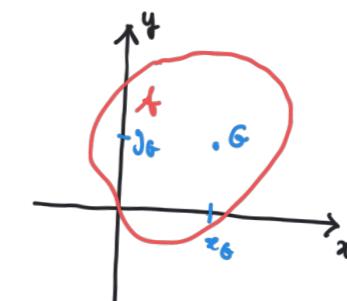
freia, G



$$y_G = \frac{S_{y_1} + S_{y_2}}{A} = \frac{A_1 y_{G_1} + A_2 y_{G_2}}{A}$$

$$= \frac{A_1}{A} y_{G_1} + \frac{A_2}{A} y_{G_2}$$

$$= \frac{3/4}{4} \frac{3/2 b}{2} + \frac{1/4}{4} \frac{b/2}{2} = \frac{5}{4} b$$



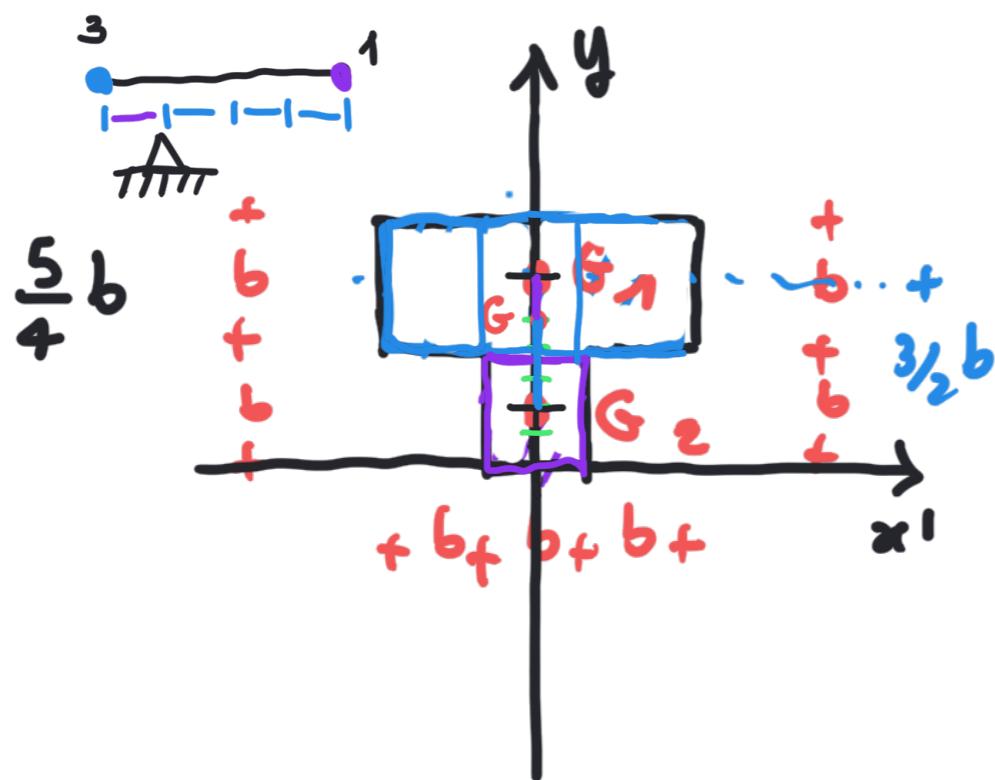
$$A = \int_A dA$$

$$S_x = \int_A y dA \quad S_y = \int_A x dA$$

$$x_G = \frac{S_y}{A} \quad y_G = \frac{S_x}{A}$$

ES:

area, G



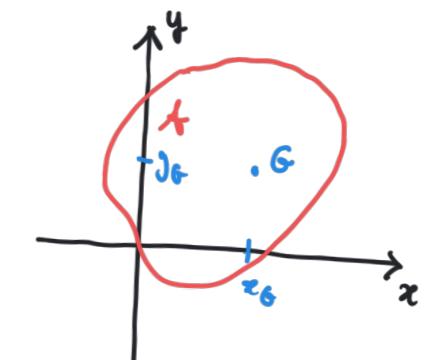
$$3b \times b + b \times b = 4b^2$$

$$x_G = 0$$

$$y_G = \frac{S_{y_1} + S_{y_2}}{A} = \frac{A_1 y_{G_1} + A_2 y_{G_2}}{A}$$

$$= \frac{A_1}{A} y_{G_1} + \frac{A_2}{A} y_{G_2}$$

$$= \frac{3}{4} \cdot \frac{3}{2} b + \frac{1}{4} \cdot \frac{1}{2} b = \frac{5}{4} b$$



$$A = \int dA$$

$$S_x = \int y dA \quad S_y = \int x dA$$

$$x_G = \frac{S_y}{A} \quad y_G = \frac{S_x}{A}$$