

工学系
公務員試験
専門試験問題
演習講座

H.30 国家一般職 機械職 No.23
(材料力学)

機械

① (正方形) - (上下の三角形)

② I は軸に平行移動しても変わらない

$$I = \int y^2 b(y) dy$$

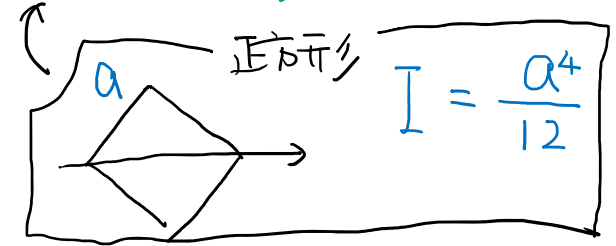
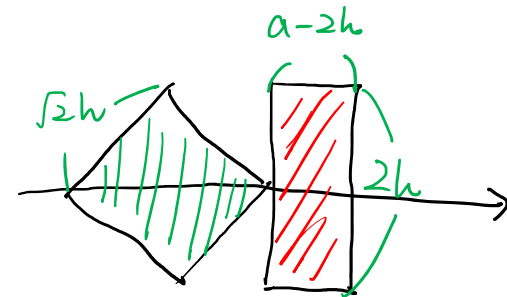
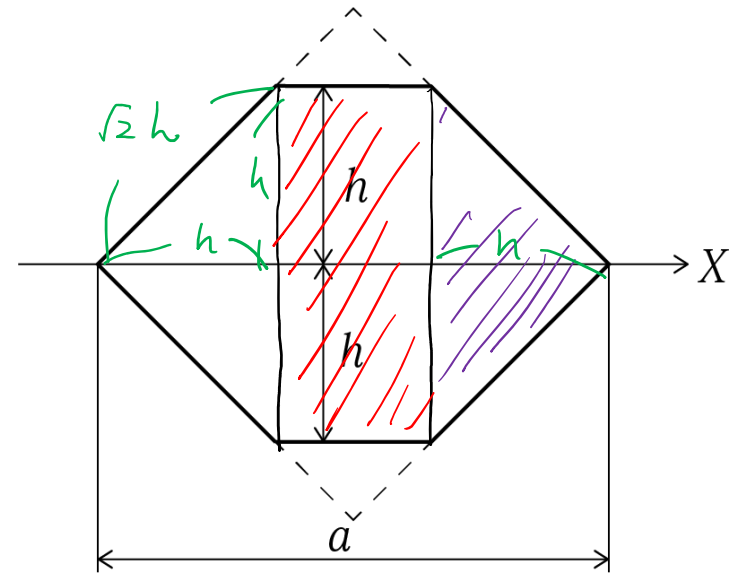
$$I = \frac{4h^4}{12} + \frac{1}{12} (a-2h)(2h)^3$$

$$= \frac{1}{3} h^4 + \frac{2}{3} (a-2h)h^3$$

$$= \frac{h^3(h+2a-4h)}{3} = \frac{h^3(2a-3h)}{3}$$

$$Z = \frac{I}{h} = \frac{h^2(2a-3h)}{3} = \frac{2ah^2-3h^3}{3}$$

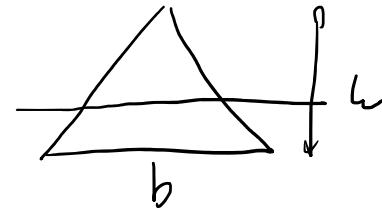
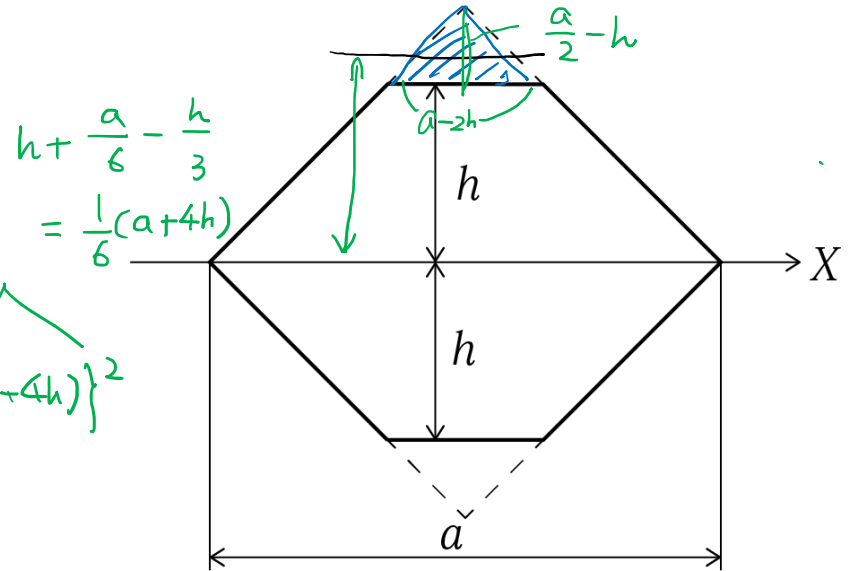
$$Z' = \frac{4ah-9h^2}{3} = 0 \quad \therefore h = \frac{4}{9}a //$$



$$I_{\text{全}} = \frac{\left(\frac{a}{\sqrt{2}}\right)^4}{12} = \frac{a^4}{48}$$

$$I_{\text{E}} = \frac{1}{36}(a-2h)\left(\frac{a}{2}-h\right)^3 + \frac{1}{2}(a-2h)\left(\frac{a}{2}-h\right) = \frac{1}{6}(a+4h)^2$$

$$\left\{ \frac{1}{6}(a+4h) \right\}^2$$



$$I = \frac{1}{36}bh^3$$