



#1: [CaseMode := Sensitive, InputMode := Word]

**Área: Area 1 + Area2:**

Para área 2 ver <https://michel.udenar.edu.co/wp-content/uploads/2024/06/MediaParabola-3.pdf>

#2:

$$\begin{bmatrix} b1 := 20 & b2 := 50 \\ h1 := 70 & h2 := 10 \\ A1 := b1 \cdot h1 & A2 := \frac{2 \cdot b2 \cdot h2}{3} \end{bmatrix}$$

#3:

$$\begin{bmatrix} b1 := 20 & b2 := 50 \\ h1 := 70 & h2 := 10 \\ A1 := 1400 & A2 := \frac{1000}{3} \end{bmatrix}$$

#4:

$$\begin{bmatrix} b1 := 20 & b2 := 50 \\ h1 := 70 & h2 := 10 \\ A1 := 1400 & A2 := 333.3333333 \end{bmatrix}$$

#5:  $A := A1 + A2$

#6:  $A := \frac{5200}{3}$

#7:  $A := 1733.333333$

**Centroide:**

$$\#8: \left[ \begin{array}{l} Xcg1 := \frac{b1}{2} \quad Xcg2 := \frac{5 \cdot b2}{8} \quad Xcg := \frac{A1 \cdot Xcg1 + A2 \cdot Xcg2}{A} \\ Ycg1 := \frac{h1}{2} \quad Ycg2 := h1 + \frac{2 \cdot h2}{5} \quad Ycg := \frac{A1 \cdot Ycg1 + A2 \cdot Ycg2}{A} \end{array} \right]$$

$$\#9: \left[ \begin{array}{l} Xcg1 := 10 \quad Xcg2 := 31.25 \quad Xcg := 14.08653846 \\ Ycg1 := 35 \quad Ycg2 := 74 \quad Ycg := 42.5 \end{array} \right]$$

$$\#10: \left[ \begin{array}{l} Xcg1 := 10 \quad Xcg2 := \frac{125}{4} \quad Xcg := \frac{1465}{104} \\ Ycg1 := 35 \quad Ycg2 := 74 \quad Ycg := \frac{85}{2} \end{array} \right]$$

**Inercias centroidales [Im,In] de cada subárea:**

$$\#11: \left[ \begin{array}{l} Im1 := \frac{1}{12} \cdot b1 \cdot h1^3 \quad Im2 := \frac{8 \cdot b2 \cdot h2^3}{175} \\ In1 := \frac{1}{12} \cdot h1 \cdot b1^3 \quad In2 := \frac{33 \cdot b2 \cdot h2^3}{160} \\ Imn1 := 0 \quad Imn2 := \frac{b2^2 \cdot h2^2}{12} \end{array} \right]$$

$$\#12: \left[ \begin{array}{l} Im1 := \frac{1715000}{3} \quad Im2 := \frac{16000}{7} \\ In1 := \frac{140000}{3} \quad In2 := \frac{515625}{2} \\ Imn1 := 0 \quad Imn2 := \frac{62500}{3} \end{array} \right]$$

$$\#13: \left[ \begin{array}{l} Im1 := 5.716666666 \cdot 10^5 \quad Im2 := 2285.714285 \\ In1 := 4.666666666 \cdot 10^4 \quad In2 := 2.578125 \cdot 10^5 \\ Imn1 := 0 \quad Imn2 := 2.083333333 \cdot 10^4 \end{array} \right]$$

**Inercias respecto a los ejes X e Y de cada subárea:**

$$\#14: \left[ \begin{array}{l} Ix1 := Im1 + A1 \cdot Ycg1^2 \quad Ix2 := Im2 + A2 \cdot Ycg2^2 \\ Iy1 := In1 + A1 \cdot Xcg1^2 \quad Iy2 := In2 + A2 \cdot Xcg2^2 \\ Ixy1 := Imn1 + A1 \cdot Xcg1 \cdot Ycg1 \quad Ixy2 := Imn2 + A2 \cdot Xcg2 \cdot Ycg2 \end{array} \right]$$

$$\#15: \left[ \begin{array}{l} Ix1 := 2.286666666 \cdot 10^6 \quad Ix2 := 1.827619047 \cdot 10^6 \\ Iy1 := 1.866666666 \cdot 10^5 \quad Iy2 := 5.833333333 \cdot 10^5 \\ Ixy1 := 4.9 \cdot 10^5 \quad Ixy2 := 7.916666666 \cdot 10^5 \end{array} \right]$$

$$\#16: \left[ \begin{array}{l} Ix1 := \frac{6860000}{3} \quad Ix2 := \frac{38380000}{21} \\ Iy1 := \frac{560000}{3} \quad Iy2 := \frac{1750000}{3} \\ Ixy1 := 490000 \quad Ixy2 := \frac{2375000}{3} \end{array} \right]$$

**Inercias de la figura respecto a los ejes X e Y:**

$$\#17: [Ix := Ix1 + Ix2, Iy := Iy1 + Iy2, Ixy := Ixy1 + Ixy2]$$

$$\#18: [Ix := 4.114285714 \cdot 10^6, Iy := 7.7 \cdot 10^5, Ixy := 1.281666666 \cdot 10^6]$$

$$\#19: \left[ Ix := \frac{28800000}{7}, Iy := 770000, Ixy := \frac{3845000}{3} \right]$$

**Inercias centroidales de la figura:**

$$\#20: [Im := Ix - A \cdot Ycg^2, In := Iy - A \cdot Xcg^2, Imn := Ixy + A \cdot Xcg \cdot Ycg]$$

$$\#21: [Im := 9.834523809 \cdot 10^5, In := 4.260536858 \cdot 10^5, Imn := 2.319375 \cdot 10^6]$$

$$\#22: \left[ Im := \frac{20652500}{21}, In := \frac{66464375}{156}, Imn := 2319375 \right]$$