EJERCICIOS

Nombre del Alumno:

José Trinidad López Domínguez

Nombre del tema: **CENTROS DE GRAVEDAD**

Parcial: 2°

Nombre de la Materia:

ESTÁTICA PARA LA ARQUITECTURA

Nombre del profesor:

Pedro Alberto García López

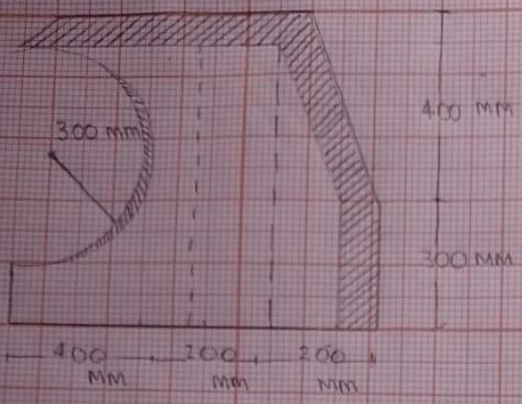
Nombre de la Licenciatura: Arquitectura

Cuatrimestre: 3°

Lugar y Fecha de elaboración:

Comitán de Domínguez, Chiapas a 14 de junio de 2024

JOSÉ TRINIDAD



FORMULA

$$Cx = \frac{A_1 x_1 + A_2 x_2}{\Sigma A} \qquad Cy = \frac{A_1 y_1 + A_1 y_2}{\Sigma A}$$

$A_1 = (800\,mm)(300\,mm) = 560,000\ mm^2$

$x_1 = \frac{800\,mm}{2} = 400\ mm$

$y_1 = \frac{300\,mm}{2} = 350\ mm$

$A_2 = \frac{\pi r^2}{2} = \frac{3.1416(300\,mm)^2}{2} = 141,372\ mm^2$

$x_2 = \frac{4(300\,mm)}{3(3.1416)} = \frac{1,200}{9.4248} = 127.3236\ mm - 800\,m = 676.676\ mm$

$y_2 = 300\,mm + 100\,mm = 400\,mm$

$A_2 = (200\,mm)(400\,mm) = 80,000\ mm^2$

$= \frac{80,000\ mm^2}{2} = 40,000\ mm^2$

$x_3 = \frac{200\,mm}{3} = 66.666\ mm$

$y_3 = \frac{400\,mm}{3} = 133.333\ mm$

$\Sigma A = 560,000\ mm^2 - 40,000\ mm^2 - 141,372\ mm^2 = 378,628\ mm^2$

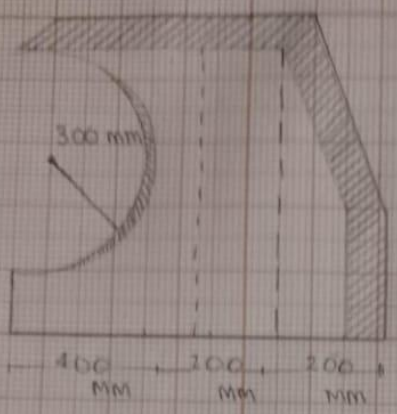
$$Cgx = \frac{560,000\ mm^2\,(400\,mm) - 141,372\ mm^2\,(672.676\,mm) - 40,000\ mm^2\,(66.666\,mm)}{378,628\ mm^2}$$

$Cgx = 333.403\ mm$

$$Cgy = \frac{560,000\ mm^2\,(350\,mm) - 141,372\ mm^2\,(133.333\,mm) - 40,000\ mm^2\,(133.333\,mm)}{378,628\ mm^2}$$

$Cgy = 354,220\ mm$

JOSÉ TRINIDAD



FORMULA

$C_x = \frac{A_1 \cdot x_1 + A_2 \cdot x_2}{\Sigma A}$ $C_y = \frac{A_1 \cdot y_1 + A_1 \cdot y_2}{\Sigma A}$

$A_1 = (800\text{ mm})(300\text{ mm}) = 560,000\text{ mm}^2$

$x_1 = \frac{800\text{ mm}}{2} = 400\text{ mm}$

$y_1 = \frac{300\text{ mm}}{2} = 350\text{ mm}$

$A_2 = \frac{\pi r^2}{2} = \frac{3.1416(300\text{ mm})^2}{2} = 141,372\text{ mm}^2$

$x_2 = \frac{4(300\text{ mm})}{3(3.1416)} = \frac{1,200}{9.4248} = 127.3236\text{ mm} - 800\text{ mm} = 672.676\text{ mm}$

$y_2 = 300\text{ mm} + 100\text{ mm} = 400\text{ mm}$

$A_3 = (200\text{ mm})(400\text{ mm}) = 80,000\text{ mm}^2$

$= \frac{80,000\text{ mm}^2}{2} = 40,000\text{ mm}^2$

$x_3 = \frac{200\text{ mm}}{3} = 66.666\text{ mm}$

$y_3 = \frac{400\text{ mm}}{3} = 133.333\text{ mm}$

$\Sigma A = 560,000\text{ mm}^2 - 40,000\text{ mm}^2 - 141,372\text{ mm}^2 = 378,628\text{ mm}^2$

$C_{gx} = \frac{560,000\text{ mm}^2(400\text{ mm}) - 141,372\text{ mm}^2(672.676\text{ mm}) - 40,000\text{ mm}^2 (66.666\text{ mm})}{378,628\text{ mm}^2}$

$C_{gx} = 333.403\text{ mm}$

$C_{gy} = \frac{560,000\text{ mm}^2(350\text{ mm}) - 141,372\text{ mm}^2(133.333\text{ mm}) - 40,000\text{ mm}^2(133.333\text{ mm})}{378,628\text{ mm}^2}$

$C_{gy} = 354,220\text{ mm}$