ROXANA GERALDINE HERNÁNDEZ GÁLVEZ

ARQ. PEDRO ALBERTO GARCIA LOPEZ
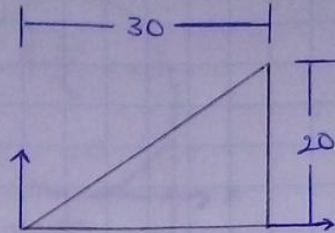
ESTATICA PARA LA ARQUITECTURA

MOMENTOS DE INERCIA EN UNA SUPERFICIE

3ER. CUATRIMESTRE

LAR- LICENCIATURA EN ARQUITECTURA "A"

COMITÁN DE DOMÍNGUEZ CHIAPAS A 22 JULIO 2021.

$$\bar{I}_x = \frac{bh^3}{36}$$

$$\bar{I}_y = \frac{b^3h}{36}$$

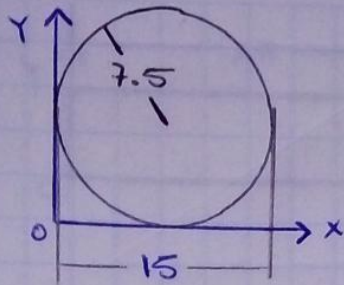$$\bar{I}_x = \frac{30 \text{ cm} (20 \text{ cm})^3}{36}$$

$$= \frac{30 \text{ cm} (8000 \text{ cm}^3)}{36}$$

$$= \frac{240,000 \text{ cm}^4}{36} \qquad = 6,666.66 \text{ cm}^4 \; /$$

$$\bar{I}_y = \frac{(30 \text{ cm})^3 (20 \text{ cm})}{36}$$

$$= \frac{(27,000 \text{ cm}^3) \; 20 \text{ cm}}{36}$$

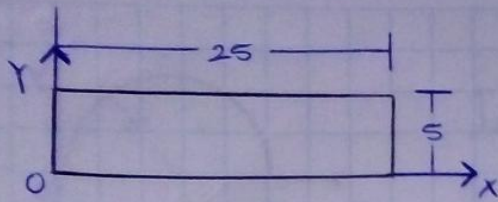$$= \frac{540,000 \text{ cm}^4}{36} \qquad = \underline{15,000 \quad \text{cm}^4} \; /$$

$$\bar{I}_x = \bar{I}_y = \frac{\pi R^4}{4}$$

$$\bar{I}_x = \bar{I}_y = \frac{3.1416 \, (7.5 \, cm)^4}{4}$$

$$= \frac{3.1416 \, (3,164.0625 \, cm^4)}{4}$$

$$= \frac{9,940.21875 \, cm^4}{4}$$

$$= 2,485.054688 \, cm^4$$

$$\bar{I}_x = \frac{bh^3}{12}$$

$$\bar{I}_y = \frac{b^3h}{12}$$
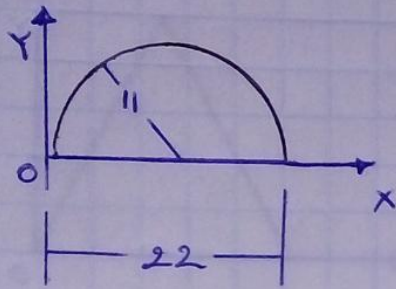

$$\bar{I}_x = \frac{25\,cm\,(5\,cm)^3}{12}$$

$$= \frac{25\,cm\,(125\,cm^3)}{12}$$

$$= \frac{3,125\,cm^4}{12} \qquad = 260.4166\ cm^4$$

$$\bar{I}_y = \frac{(25\,cm)^3\,(5\,cm)}{12}$$

$$= \frac{(15,625\,cm^3)\,5\,cm}{12}$$

$$= \frac{78,125\,cm^4}{12} \qquad = 6,510.4166\ cm^4$$

$$I_x = 0.1098 \, R^4$$

$$\bar{I}_x = 0.1098 \, (11)^4$$

$$= 0.1098 \, (14{,}641 \, cm^4)$$

$$= \underline{1{,}607.5818 \, cm^4}$$

$$\bar{I}_x = \frac{b h^3}{36}$$

$$\bar{I}_y = \frac{b^3 h}{48}$$

A diagram: a triangle with apex near top. Y-axis vertical, X-axis horizontal. Top dimension "8", left vertical dimension "13.9", bottom dimension "16". Origin labeled "o".
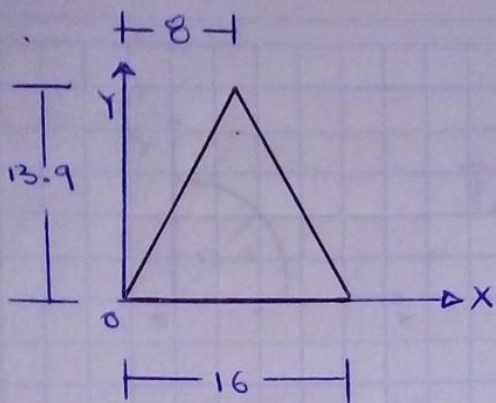
$$\bar{I}_x = \frac{16\ cm\ (13.9\ cm)^3}{36}$$

$$= \frac{16\ cm\ (2,685.619\ cm^3)}{36}$$

$$= \frac{42,969.904\ cm^4}{36} = 1,193.60\ cm^4$$

$$\bar{I}_y = \frac{(16\ cm)^3\ (13.9\ cm)}{48}$$

$$= \frac{4,096\ cm^3\ (13.9\ cm)}{48}$$

$$= \frac{56,934.4\ cm^4}{48} \qquad 1,186.1333\ cm^4$$
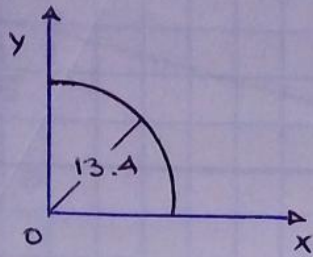
$$\bar{I}_x = \bar{I}_y = 0.05488 \, R^4$$

$$\bar{I}_x = \bar{I}_y = 0.05488 \, (13.4 \text{ cm})^4$$

$$= 0.05488 \, (32{,}241.7936 \text{ cm}^4)$$

$$= \underline{1{,}769.429633 \text{ cm}^4}$$
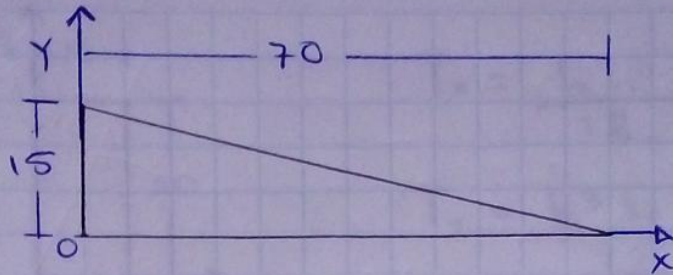
$$\bar{I}_x = \frac{bh^3}{36}$$

$$\bar{I}_y = \frac{b^3 h}{36}$$

$$\bar{I}_x = \frac{70\,cm\,(15\,cm)^3}{36}$$

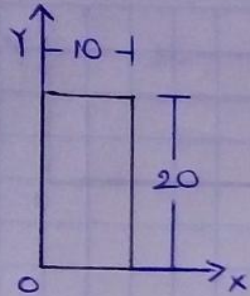$$= \frac{70\,cm\,(3,375\,cm^3)}{36}$$

$$= \frac{236,250\,cm^4}{36} = \underline{6,562.5\ cm^4}$$

$$\bar{I}_y = \frac{(70\,cm)^3\,(15\,cm)}{36}$$

$$= \frac{343,000\,cm^3\,(15\,cm)}{36}$$

$$= \frac{5,145,000\,cm^4}{36} = \underline{142,916.66\ cm^4}$$

$$\overline{I}_x = \frac{b\,h^3}{12}$$

$$\overline{I}_y = \frac{b^3\,h}{12}$$

$$\overline{I}_x = \frac{10\ cm\ (20\ cm)^3}{12}$$

$$= \frac{10\ cm\ (8,000\ cm^3)}{12}$$

$$= \frac{80,000\ cm^4}{12} = 6,666.66\ cm^4$$

$$\overline{I}_y = \frac{(10\ cm)^3\ 20\ cm}{12}$$

$$= \frac{(1,000_{cm^3})\ 20\ cm}{12}$$

$$= \frac{20,000\ cm^4}{12} = 1,666.66\ cm^4$$
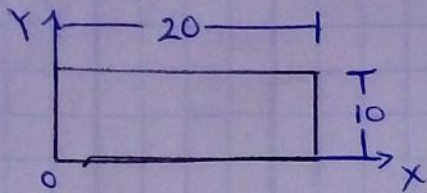
$$\overline{I}_x = \frac{bh^3}{12}$$

$$\overline{I}_y = \frac{b^3 h}{12}$$

$$\overline{I}_x = \frac{20 \text{ cm} (10 \text{ cm})^3}{12}$$

$$= \frac{20 \text{ cm} (1,000 \text{ cm}^3)}{12}$$

$$= \frac{20,000 \text{ cm}^4}{12} \qquad = 1,666.66 \text{ cm}^4$$

$$\overline{I}_y = \frac{(20 \text{ cm})^3 \ 10 \text{ cm}}{12}$$

$$= \frac{(8,000 \text{ cm}^3) \ 10 \text{ cm}}{12}$$

$$= \frac{80,000 \text{ cm}^4}{12} \qquad = 6,666.66 \text{ cm}^4$$

$$\bar{I}_x = \frac{b\,h^3}{12}$$

$$\bar{I}_y = \frac{b^3 h}{12}$$
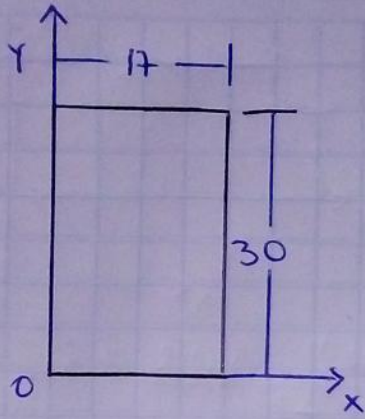
$$\bar{I}_x = \frac{17\ cm\,(30\ cm)^3}{12}$$

$$= \frac{17\ cm\,(27,000\ cm^3)}{12}$$

$$= \frac{459,000\ cm^4}{12} = 38,250\ cm^4$$

$$\bar{I}_y = \frac{(17\ cm)^3\ 30\ cm}{12}$$

$$\frac{(4,913\ cm^3)\ 30\ cm}{12}$$

$$\frac{147,390\ cm^4}{12} = 12,282.5\ cm^4$$