

Center of mass along X axis is 0 since this figure is symmetrical about Y axis.

The center of mass along Y axis is:

$$\begin{aligned}\bar{y} &= \frac{1}{A/2} \int_{-R\cos\alpha}^R \frac{1}{2} \left(\sqrt{R^2 - x^2} \right)^2 dx = \frac{1}{A} \int_{-R\cos\alpha}^R R^2 - x^2 dx = \frac{1}{A} \left(R^2 x - \frac{1}{3} x^3 \right) \Big|_{-R\cos\alpha}^R = \\ &= \frac{1}{A} \left(R^3 - R^3 \cos^3 \alpha - \frac{R^3}{3} + \frac{R^3 \cos^3 \alpha}{3} \right) = \frac{R^3}{A} \left(\frac{2}{3} - \cos^3 \alpha + \frac{\cos^3 \alpha}{3} \right)\end{aligned}$$