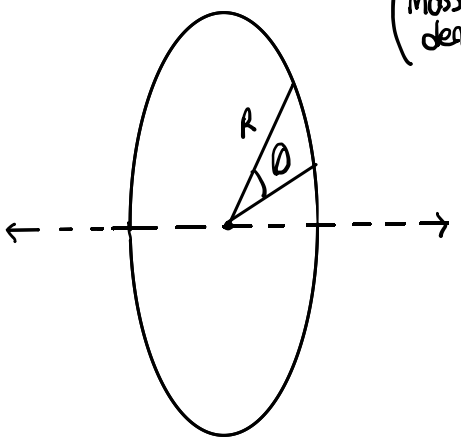
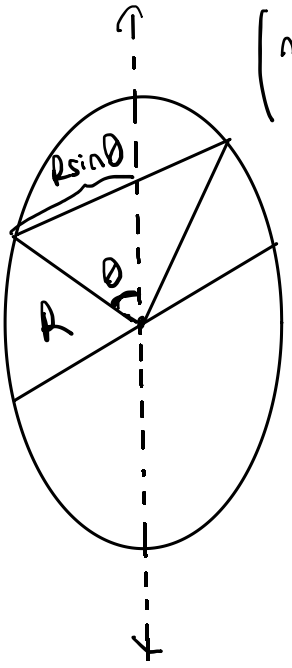


$\left(\begin{matrix}\text{mass}\\ \text{density}\end{matrix}: \lambda\right) \qquad \left(\lambda = \frac{M}{2\pi R}\right)$

$$\left.\begin{matrix} dm = \lambda ds \\ ds = R d\theta \end{matrix}\right\} dm = \lambda R d\theta$$

$$I = \int r^2 dm = \int_0^{2\pi} R^2 \lambda R d\theta = 2\pi \lambda R^3 = 2\pi \cdot \frac{M}{2\pi R} \cdot R^3 = MR^2$$



$\left(\begin{matrix}\text{mass}\\ \text{density}\end{matrix}: \lambda\right) \qquad \left(\lambda = \frac{M}{2\pi R}\right)$

$$\left.\begin{matrix} dm = \lambda ds \\ ds = R d\theta \end{matrix}\right\} dm = \lambda R d\theta$$

$$I = \int r^2 dm = \underbrace{4}_{\text{for each quadrant}} \int_0^{\pi/2} R^2 \sin^2\theta \, \lambda R d\theta = 4R^3\lambda \int_0^{\frac{\pi}{2}} \sin^2\theta \, d\theta$$

$$4R^3\lambda \cdot \frac{\pi}{4} = R^3\pi \cdot \frac{M}{2\pi R} = \frac{1}{2}MR^2$$