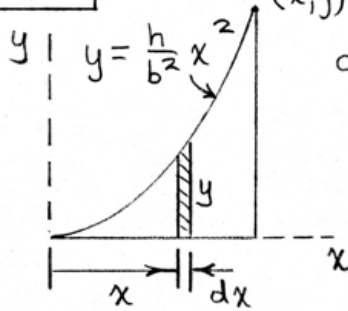


B/30

 $(x, y) = (b, h)$ Plate thickness  $t$ 

$$dm = \rho dV = \rho y dx t$$

$$= \rho t \frac{h}{b^2} x^2 dx$$

$$dI_{xx} = \frac{1}{3} dm y^2$$

$$= \frac{1}{3} \rho t \frac{h^3}{b^6} x^6 dx$$

$$dI_{yy} = x^2 dm = \rho t \frac{h}{b^2} x^4 dx$$

$$m = \int dm = \int_0^b \rho t \frac{h}{b^2} x^2 dx = \rho t \frac{h}{b^2} \frac{b^3}{3} = \frac{1}{3} \rho t h b$$

$$I_{xx} = \int dI_{xx} = \int_0^b \frac{1}{3} \rho t \frac{h^3}{b^6} x^6 dx$$

$$= \frac{1}{3} \rho t \frac{h^3}{b^6} \frac{b^7}{7} = \frac{1}{21} \rho t h^3 b \left( \frac{m}{\frac{1}{3} \rho t h b} \right)$$

$$= \underline{\underline{\frac{1}{7} m h^2}}$$

$$I_{yy} = \int dI_{yy} = \int_0^b \rho t \frac{h}{b^2} x^4 dx$$

$$= \rho t \frac{h}{b^2} \frac{b^5}{5} = \frac{1}{5} \rho t h b^3 \left( \frac{m}{\frac{1}{3} \rho t h b} \right) = \underline{\underline{\frac{3}{5} m b^2}}$$

$$I_{zz} = I_{xx} + I_{yy} = \underline{\underline{m \left( \frac{3b^2}{5} + \frac{h^2}{7} \right)}}$$