



$$I_1 = 2 \int_0^{L/2} (y \sin \alpha)^2 b dy$$

$$= 2b \sin^2 \alpha \int_0^{L/2} y^2 dy$$

$$= 2b \sin^2 \alpha \left[ \frac{1}{3} y^3 \right]_0^{L/2}$$

$$= 2b \sin^2 \alpha \frac{1}{3} \frac{L^3}{8} = \left( \frac{1}{12} b L^3 \right) \sin^2 \alpha$$