23.6

(a): Integrate $\int x^2 \lambda(x)\, dx = \frac{m}{L}\int x^2\, dx$

$= \frac{m}{L}\left[\frac{x^3}{3}\right]_{\frac{-L}{2}}^{\frac{L}{2}}$

$= \frac{m}{L}\left(\frac{L^3}{24} + \frac{L^3}{24}\right) =$

$= \frac{m}{L}\left(\frac{L^3}{24} + \frac{L^3}{24}\right) = mL^2 \cdot \frac{1}{12}$

(b): Integrate $\int_0^L x^2 \lambda(x)\, dx = \frac{m}{L}\int_0^L x^2$

$\frac{m}{L} \cdot \frac{L^3}{3} = mL^2 \frac{1}{3}$