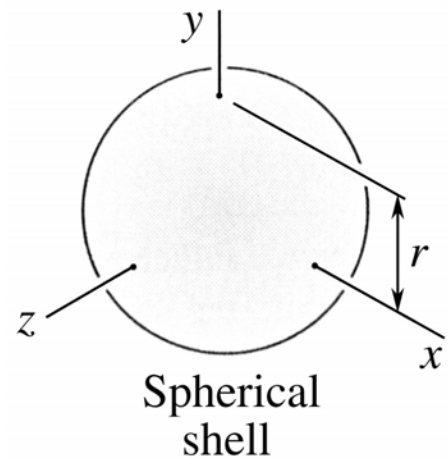


MEEG 2013 [Quiz #6.m20.082](#)

1. ③ Including a sketch, describe the *parallel-axis theorem* for mass moment of inertia of a body.

2. ⑦ A thin spherical shell of mean radius r and total mass m is shown. Using integration, determine (a) its moment of inertia I_x about the x axis that passes through its center of mass, (b) its radius of gyration k_x .



1. Sketch: ①

The *parallel-axis theorem* for mass moment of inertia of a body states that the moment of inertia I of a body of mass m about any given axis is equal to the moment of inertia \bar{I} of the body about a central axis parallel to the given axis plus the product md^2 , where d is the distance between those two axes; i.e.,

$$I = \bar{I} + md^2 \quad ②$$

2. (a) Sketch and calculus: ⑤ $I_x = \frac{2}{3}mr^2$ ①

(b) $k_x = (2/3)^{1/2}r = 0.816r$ ①