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General Physics-I, Quiz 2
PHYS1000AA, Fall Semester-108
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St. ID: _____,

Name: _____

Chapter 11

1. A uniform solid sphere of radius $r = 0.500$ m and mass $m = 15.0$ kg turns counter clockwise about a vertical axis through its centre. Find its vector angular momentum about this axis when its angular speed is 3.00 rad/s.

Ans:

2. The angular momentum vector of a precessing gyroscope sweeps out a cone as shown in Figure P11.31. The angular speed of the tip of the angular momentum vector, called its precessional frequency, is given by $\omega_p = \tau/L$, where τ is the magnitude of the torque on the gyroscope and L is the magnitude of its angular momentum. In the motion called *precession of the equinoxes*, the Earth's axis of rotation precesses about the perpendicular to its

orbital plane with a period of 2.58×10^4 yr. Model the Earth as a uniform sphere and calculate the torque on the Earth that is causing this precession.

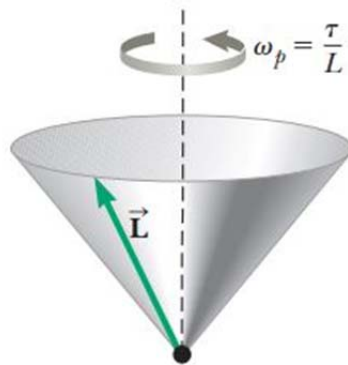


Figure P11.31 A precessing angular momentum vector sweeps out a cone in space.

Ans: