

ASSIGNMENT #4

Due by Friday, February 3 at 5pm in box on first floor of Broida

- 1) A solid sphere of radius  $R$  and mass  $M$  is rotating about an axis through its center with angular velocity  $\omega$ . What is its angular momentum?
  
- 2) Which of the following forces are conservative (where  $a, b, c$  are constants)? For those that are, find the corresponding potential energy  $U$  and verify that  $\vec{F} = -\vec{\nabla}U$ .
  - a)  $\vec{F} = (ax, by^2, cz^3)$
  - b)  $\vec{F} = (ax, bx, 0)$
  - c)  $\vec{F} = (ay, ax, 0)$
  
- 3) Taylor, problem 4.2
  
- 4) Taylor, problem 4.8
  
- 5) Taylor, problem 4.28