

Name: _____

PHYS 505: Classical Mechanics (graduate), Quiz #3

Instruction: use additional sheets if you find it necessary

In some coordinate system whose origin is located at the center of mass of a rigid body, the tensor of inertia has the following form (in some units):

$$I = \begin{pmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{pmatrix}$$

Find the principal moments of inertia, I_1 , I_2 , and I_3 and the three axes that correspond to these moments of inertia, i.e. find three unit vectors such that the moments of inertia are equal to I_1 , I_2 , and I_3 when the body is rotated about the axes whose directions are defined by these unit vectors.