

# Classical Mechanics

## Euler angles

**Problem 1.-** A book is modeled as a rectangular box with corners at

$$\vec{r}_1 = (0,0,0)$$

$$\vec{r}_2 = (1,0,0)$$

$$\vec{r}_3 = (1,4,0)$$

$$\vec{r}_4 = (0,4,0)$$

$$\vec{r}_5 = (0,0,5)$$

$$\vec{r}_6 = (1,0,5)$$

$$\vec{r}_7 = (1,4,5)$$

$$\vec{r}_8 = (0,4,5)$$

Calculate the final coordinates after a rotation of  $30^\circ$  about the z-axis, followed by a  $45^\circ$  rotation about the new x-axis and finally a  $30^\circ$  rotation about the new-new z-axis.

