ME 115(a): Addendum to Homework #3

(Due Thursday Feb. 7, 2002)

(Note: due to the removal of unnecessary problems from the original version of homework #3, this problem is being added.)

Problem 6:

part (a): Let a rotation matrix $R \in SO(3)$ take the form:

$$R = \begin{bmatrix} r_{11} & r_{12} & r_{13} \\ r_{21} & r_{22} & r_{23} \\ r_{31} & r_{32} & r_{33} \end{bmatrix}.$$

Given this matrix, find an expression for the quaternion parameters that represent this same rotation as a function of the $\{r_{ij}\}$

part (b): Consider the following rotation matrix:

$$\begin{bmatrix} 0.882772 & -0.416266 & 0.217798 \\ 0.44976 & 0.882772 & -0.135756 \\ -0.135756 & 0.217798 & 0.966506 \end{bmatrix}$$

Using your results of part (a), find the unit quaternion parameters of this rotation.