EXAM DATE: As we decided in class, the next in-class exam will be Tuesday, November 25.

Note, you are welcome to use a symbolic manipulation program such as Mathematica to complete any part of this assignment.

1.) Derive Eq. (3.3.11) on page 170 of Sakurai and prove that the unimodular condition (3.3.12) is obeyed if it is obeyed for $U(a_1, b_1)$ and $U(a_2, b_2)$.

2.) Equation (3.3.16) on page 172 is needed for the simplification of the Euler rotations. It is possible to show this geometrically, but here I would like you to prove the equation using what we derived in class. In class I showed you an explicit formula for $R(\hat{n}, \theta)$. First calculate each of the four $R$ matrices and then show that the product on the RHS of (3.3.16) is equal to the LHS.

3.) Now prove Eq. (3.3.17).