PROBLEM SET # 7
MATH 252

Due October 21.

1. Show that SO_4 is isomorphic to the quotient of $SU_2 \times SU_2$ by the subgroup generated by $(-1,-1)$. Hint : consider the representation of $SU_2 \times SU_2$ in the space of quaternions $\mathbb{H}$ by left and right multiplication.

2. Show the following identity for representations of SU_2

$$\rho_m \otimes \rho_n = \rho_{m+n} \oplus \rho_{m+n-2} \oplus \cdots \oplus \rho_{m-n},$$

assuming $m \geq n$.

Date: October 13, 2005.