Phys. 622: Problem Set VIII

- 1. JJS 3.15
- 2. JJS 3.17
- 3. JJS 3.20
- 4. JJS 3.21

5. We add two equal angular momenta $j_1 = j_2 = j$. Show that in a permutation of m_1 and m_2 the eigenfunctions of the total angular momentum are either symmetric or antisymmetric, and that this symmetry property depends only on J. In fact, they are symmetrical or antisymmetrical according to that $(-1)^{2j+J}$ is equal to +1 or -1.

6. Calculate the magnetic moment of the electron in an hydrogen atom in the eigenstate $|nljm_j\rangle$.