

Name: _____

Date: _____

Time for Completion: _____

Honours QM HW #9

1. Griffiths 12.1
2. Prove that

$$\langle \mathbf{a} \cdot \mathbf{S}_1 \otimes \mathbf{b} \cdot \mathbf{S}_2 \rangle = -\frac{1}{4} \mathbf{a} \cdot \mathbf{b} \quad (1)$$

for a spin singlet state of two particles,

$$|\psi\rangle = \frac{1}{\sqrt{2}} (|+, z\rangle_1 \otimes |-, z\rangle_2 - |-, z\rangle_1 \otimes |+, z\rangle_2). \quad (2)$$