

# Homework 09

## Problem 1

With  $H = k\vec{S}_1 \cdot \vec{S}_2$  for two spin- $\frac{1}{2}$  electrons, check states  $|S_1, S_2, S, m_s\rangle$  defined in lecture note are eigenstates, and find relevant eigen energies. Here  $k$  is a constant.