Homework #7 for Physics 371

Due 4pm Friday March 11

1–5) Griffiths, 2.15, 2.16, 2.42, 3.4, 3.31

6) Show that the variance $(\Delta Q)^2 = \langle \hat{Q}^2 \rangle - \langle \hat{Q} \rangle^2$ is zero only when ψ is an eigenfunction of $\hat{Q}$. (Hint: let $\psi = \sum_i c_i \psi_i$, where the ψ_i satisfy $\hat{Q}\psi_i = q_i \psi_i$.)