In section 7.2, Griffiths derived an upper bound of $-77.5\text{eV}$ for the ground state energy of a Helium atom (see also Lecture 16). The experimental value is $-78.975\text{eV}$.

Use second-order perturbation theory, the variational approach, or direct numerical solution to obtain a better result than Griffiths for the ground state energy of the Helium atom.