

University of Kentucky, Physics 521  
Homework #16, Rev. A, due Wednesday, 2018-03-21

0. Griffiths [2ed] Ch. 6 #1, #2, #5, #9, #16, #36.

1. Show that in **third-order** perturbation theory,

$$E_n^3 = \sum_{l,m \neq n} \frac{V_{nl}V_{lm}V_{mn}}{\Delta_{nl}\Delta_{nm}} - V_{nn} \sum_{m \neq n} \frac{|V_{nm}|^2}{\Delta_{nm}^2},$$

where  $V_{mn} \equiv \langle \psi_m^0 | H' | \psi_n^0 \rangle$  and  $\Delta_{mn} = E_m - E_n$  [Griffiths, p. 256].