Phys 451 **Winter 2026**

Worksheet #10

(Wednesday, January 28, 2026)

Name

Questions (5 pts):

As we discussed, there is a convention for how the states are normalized in the perturbation theory.

(a) Apply the convention ($|n\rangle$ is normalized, $\langle n^{(0)}|n\rangle$ is real) to the first-order approximation to obtain $\langle n^{(0)}|n^{(1)}\rangle$.

(b) **If you have time:** Write down the normalization condition to the second-order approximation. Use the result of (a) to figure out what it implies for the $\langle n^{(1)}|n^{(1)}\rangle$ inner product.