1. *Atmospheric Stability* [5 pts]
   French scientists have developed a high-altitude balloon that remains at constant potential temperature as it circles the earth. Suppose such a balloon is in the lower equatorial stratosphere where the temperature is isothermal at 200K. If the balloon were displaced vertically from its equilibrium by a small disturbance $dz$, it would tend to oscillate about the equilibrium level. What is the period of this oscillation?

2. *Petty Problem 8.7* [10 pts]

3. *Petty Problem 3.14* [5 pts]

4. *Petty Problem 4.16* [5 pts]

5. *Petty Problem 5.12* [5 pts]

6. *Petty Problem 7.19a* [5 pts]