Thermodynamics
Homework Seven
Due Friday, May 13, 2016

This assignment will be a bit longer than usual, since it covers 1.5 weeks instead of one. However, I think these problems will be much less mathematically demanding than those on the last problem set, and will involve a good bit more interesting physics.

1. Problem 4.14. Heat Pumps!

2. Problem 4.18 Optional. This problem involves a modest amount of algebra and could be a good review of the physics of adiabatic and isothermal processes.

3. Problem 4.20 Optional. This problem involves a less modest amount of algebra. I'm not sure the process of doing this problem will lead to deep understanding, but the final result—the efficiency of a Diesel engine—is a useful and important result, although it is not a simple formula.

4. Problem 4.22

5. Problem 4.34 Optional. Looks at what happens if we relax the assumption that $H_1 = H_2$.

6. Problem 4.26

7. Problem 3.37 Optional. This problem uses the chemical potential to derive the exponential atmosphere. You can do part (b) without doing part (a) if you want.

8. Problem 5.4

9. Problem 5.6