Study guide: Exam 1, Chapters 18, 19, and 20

You will be tested on all the material (Chapter sections) covered in lectures 1-7.
- Be able to solve in-class problems and understand important derivations
- Be able to solve HW1-HW3 problems
- There will be one derivation on the exam!

Here is a list of things you do not need to know for exam 1:

- HW 2, problem 19.77

- lecture 4: You do not need to know how to derive \( (KE_{av})_{av} = \frac{1}{2}m(v^2)_{av} \)

- lecture 5: You do not need to remember
  1) \( \text{Pr}(v) = 4\pi \left( \frac{M}{2\pi RT} \right)^{3/2} v^2 e^{-\frac{Mv^2}{2RT}} \) or \( \text{Pr}(v) = 4\pi \left( \frac{m}{2\pi k_B T} \right)^{3/2} v^2 e^{-\frac{mv^2}{2k_BT}} \)
  2) \( v_{av} = \int_0^\infty vP(v)dv : \int_0^\infty \text{Pr}(v)dv = 1 \)

- lecture 6: you don't need to know the
  1) derivation of heat engine efficiency
  2) derivation of heat pump's coefficient of performance
  3) derivation of Carnot engine efficiency

- lecture 7:
  1) Derivation of change in entropy equation
  2) Entire section on "A statistical View of Entropy" including \( S = k_B \ln(w) \),