Study guide for Chapter 1

1) Definition of pressure
2) Pressure due to Hg column $\mathbf{P} = \rho g h$
3) Ideal gas law PV=nRT
4) Kinetic theory of gas

   $E_k = \frac{3}{2}RT$ or $\varepsilon_k = \frac{3}{2}\ k_B$T for monoatomic gas
5) Rate of effusion

   $\bar{\upsilon} \approx \frac{1}{\sqrt{\rho}}$ or $\bar{\upsilon} \approx \frac{1}{\sqrt{M}}$

6) Molecular collision

   $\lambda = \frac{\bar{\upsilon}_A}{Z_A}$ Mean free path; Given collision diameter, find λ

   What is $\bar{\upsilon}_A$, Z_A given above eqn.?

7) $P=P_0\, e^{\frac{-mg}{RT}z} = P_0 e^{\frac{-E_p}{RT}}$
8) Maxwell distribution : Distribution shape for different T/ Gases
9) Real gas $Z=\frac{PV_m}{RT} \neq 1$
10) What is T_c? Shape of isotherms above/below T_c?
11) vdW eqn. $(P+\frac{a}{V_m^2})\,(v_m - b) = RT$
12) Law of corresponding states, reduced quantities

    $(P_r + \frac{3}{V_r^2})(V_r - \frac{1}{3}) = \frac{8}{3}T_r$; what is meaning?