$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\left(\frac{R}{\Delta H_{vap}}\right)\cdot \ln\left(\frac{P_2}{P_1}\right) = \left(\frac{R}{\Delta H_{vap}}\right)\cdot\left(\frac{\Delta H_{vap}}{R}\right)\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\frac{1}{T_1} - \frac{1}{T_2} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot \ln\left(\frac{P_2}{P_1}\right)$$

$$\frac{1}{T_1} - \frac{1}{T_2} + \frac{1}{T_2} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot \ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}$$

$$\frac{1}{T_1} = \left(\frac{R}{\Delta H_{vap}}\right)\cdot \ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}$$

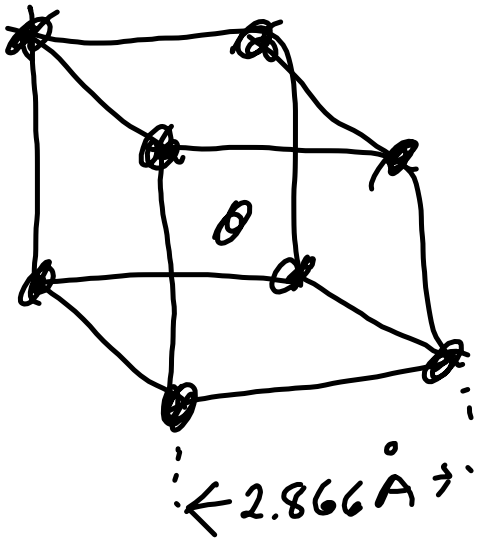
$$T_1 = \frac{1}{\left(\frac{R}{\Delta H_{vap}}\right)\cdot \ln\left(\frac{P_2}{P_1}\right) + \frac{1}{T_2}}$$

$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{vap}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$R \cdot \ln\left(\frac{P_2}{P_1}\right) = R \cdot \left(\frac{\Delta H_{vap}}{R}\right)\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\frac{\Delta H_{vap}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)} = \frac{R \cdot \ln\left(\frac{P_2}{P_1}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$

$$\Delta H_{vap} = \frac{R \cdot \ln\left(\frac{P_2}{P_1}\right)}{\left(\frac{1}{T_1} - \frac{1}{T_2}\right)}$$



$$d = \frac{m}{V}$$

$$V = s^3 = (2.866 \times 10^{-8}\ cm)^3$$

$$= 2.354 \times 10^{-23}\ cm^3$$

$$\frac{55.85\ g}{1\ mol}\left(\frac{1\ mol}{6.022 \times 10^{23}\ atoms}\right)\left(\frac{2\ atoms}{1\ unit\ cell}\right)$$

$$= 1.855 \times 10^{-22}\ \frac{g}{unit\ cell}$$

$$d = \frac{m}{V} = \frac{1.855 \times 10^{-22}\ g}{2.354 \times 10^{-23}\ cm^3} = 7.880\ \frac{g}{cm^3}$$