

$$R = 0.0821 \text{ L atm/(mol K)} = 8.314 \text{ J/(mol K)} = 8.314 \times 10^{-3} \text{ kJ/(mol K)}$$

$$1 \text{ atmosphere} = 760 \text{ mm Hg}$$

$$\ln(P) = - \left( \frac{\Delta H_{vap}^0}{RT} \right) + C$$

$$\ln \left( \frac{P_2}{P_1} \right) = \left( \frac{\Delta H_{vap}^0}{R} \right) \left[ \frac{1}{T_1} - \frac{1}{T_2} \right]$$

Zero Order

$$[R] = [R]_0 - kt$$

First Order

$$[R] = [R]_0 e^{-kt}$$

$$\ln[R] = \ln[R]_0 - kt$$

$$t_{1/2} = \frac{0.693}{k}$$

Second Order

$$\frac{1}{[R]} = \frac{1}{[R]_0} + kt$$

$$k = Ae^{-\frac{E_a}{RT}}$$

$$\ln(k) = \ln(A) - \frac{E_a}{RT}$$

$$\ln \left( \frac{k_2}{k_1} \right) = - \frac{E_a}{R} \left( \frac{1}{T_2} - \frac{1}{T_1} \right)$$