

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

$$\Delta E_{H \text{ atom}} = R_H \left(\frac{1}{n_i^2} - \frac{1}{n_f^2}\right)$$

$$pH = pK_a + \log\left(\frac{[A^-]}{[HA]}\right)$$

$$E = E^0 - \frac{RT}{nF} \ln Q$$

$$E = E^0 - \frac{0.059}{n} \log(Q) \quad \text{at } 25 \text{ } ^\circ\text{C}$$

$$\Delta U = q + w$$

$$\Delta G^0 = -RT \ln K$$

$$\Delta G^0 = -nFE^0$$

$$\Delta G^0 = \Delta H^0 - T\Delta S^0$$

$$[A] = -kt + [A]_0$$

$$\ln[A] = -kt + \ln[A]_0$$

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

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