

$$\ln(P_1/P_2) = \Delta H_{\text{vap}}/R(1/T_1 - 1/T_2)$$

$$\ln(K_1/K_2) = \Delta H_{\text{rxn}}/R(1/T_1 - 1/T_2)$$

$$q = m \cdot c \cdot \Delta T$$

$$q = m \cdot \Delta H$$

$$c_{\text{ice}} = 2.05, c_{\text{water}} = 4.184, c_{\text{steam}} = 2.08 \text{ J/gK}$$

$$P_{\text{total}} = P_a \cdot X_a + P_b \cdot X_b$$

$$X_a = n_a/n_{\text{total}}$$

$$\Delta T_b = i \cdot m \cdot K_b, K_b = 0.512 \text{ K/m}$$

$$\Delta T_f = i \cdot m \cdot K_f, K_f = 1.86 \text{ K/m}$$

$$\Delta G = -R \cdot T \cdot \ln K$$

$$K_w = [\text{H}^+][\text{OH}^-] = 10^{-14}$$

$$[\text{H}^+] = C_a, [\text{H}^+] = (K_a \cdot C_a)^{0.5}$$

$$[\text{OH}^-] = C_b, [\text{OH}^-] = (K_b \cdot C_b)^{0.5}$$

$$\text{pH} = -\log[\text{H}^+], \text{pOH} = -\log[\text{OH}^-]$$