CONSTANTS

$R = 8.314 \ \frac{J}{mol \cdot K}$ $\qquad \mathcal{F} = \frac{96{,}500\,J}{V \cdot mol\ e^-} = \frac{96{,}500\,Coul}{mol\ e^-}$ $\qquad K_w = 1.0 \times 10^{-14}$ at 25 °C

EQUATIONS

$K_p = K_c (RT)^{\Delta n}$ $\qquad pH = pK_a + \log \left[\frac{c.base}{acid} \right]$ $\qquad K = \left(\frac{k_f}{k_r} \right)$

$\ln \left(\frac{[A]_t}{[A]_0} \right) = - k\,t$ $\qquad t_{1/2} = \frac{0.693}{k}$

$\frac{1}{[A]_t} = k\,t + \frac{1}{[A]_0}$ $\qquad t_{1/2} = \frac{1}{k[A]_0}$

$\ln k = -\frac{E_a}{R}\left(\frac{1}{T}\right) + \ln A$ $\qquad \ln \left(\frac{k_1}{k_2} \right) = \frac{E_a}{R}\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$

$\Delta S_{surr} = -\frac{\Delta H_{sys}}{T}$ $\qquad \Delta S_{tot} = \Delta S_{sys} + \Delta S_{surr}$

$\Delta G = \Delta G° + RT \ln Q$ $\qquad \Delta G° = \Delta H° - T\Delta S°$

$\Delta G° = -n \mathcal{F} \mathcal{E}°$ $\qquad \Delta G° = -RT \ln K$

$\mathcal{E} = \mathcal{E}° - \frac{RT}{n\mathcal{F}} \ln Q$ or $\mathcal{E} = \mathcal{E}° - \frac{0.0592}{n} \log Q$ or $\mathcal{E} = \mathcal{E}° - \frac{0.0257}{n} \ln Q$

$\mathcal{E}^o = \frac{RT}{n\mathcal{F}} \ln K$ or $\mathcal{E}° = \frac{0.0592}{n} \log K$ or $\mathcal{E}° = \frac{0.0257}{n} \ln K$