

Some Useful Information

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

$$\log \frac{[A]}{[A]_0} = \frac{-kt}{2.303}$$

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

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

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

$$K_w = 1 \times 10^{-14}$$

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

$$R = 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1}$$

$$R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$