Asam Lemah

$$[H^+] = \sqrt{[H_xA] \times K_a H_xA}$$

$$K_a = \frac{[H^+][A^-]}{[HA]}$$

$$\alpha = \sqrt{\frac{K_a}{[HA]}}$$

$$[H^+] = \alpha\,[HA]$$

Basa Lemah

$$[OH^-] = \sqrt{[B(OH)_x] \times K_b\, B(OH)_x}$$

$$K_b = \frac{[B^+][OH^-]}{[BOH]}$$

$$\alpha = \sqrt{\frac{K_b}{[BOH]}}$$

$$[OH^-] = \alpha\,[BOH]$$

$$[OH^-] = \sqrt{\frac{K_w}{K_a} \times [A^-]}$$

Larutan garam (asam lemah + basa kuat)

$$[OH^-] = \sqrt{\frac{K_w}{K_a} \times [A^-]}$$

$$[OH^-] = \sqrt{K_h \times [A^-]}$$

$$pOH = \frac{1}{2}\,(14 - pK_a - \log log\,[A^-])$$

$$pH = \frac{1}{2}\,(14 + pK_a + \log log\,[A^-])$$

Larutan garam (asam kuat + basa lemah)

$$[H^+] = \sqrt{\frac{K_w}{K_b} \times [B^+]}$$

$$[H^+] = \sqrt{K_h \times [B^+]}$$

$$pH = \frac{1}{2}\,(14 - pK_b - \log log\,[B^+])$$

$$\alpha = \sqrt{\frac{K_w}{K_b \times [B^+]}}$$

Larutan garam (asam lemah + basa lemah)

$$[H^+] = \sqrt{\frac{K_w \times K_a}{K_b}}$$

$$[OH^-] = \sqrt{\frac{K_w \times K_b}{K_a}}$$

$$pH = \frac{1}{2}\,(14 + pK_a - pK_b)$$

$$\alpha = \frac{\sqrt{K_h}}{1 + \sqrt{K_h}}$$

Larutan penyangga asam

$$[H^+] = K_a \times \frac{mol\ asam}{mol\ garam}$$

$$pH = pK_a - log\left(\frac{mol\ asam}{mol\ garam}\right)$$

Larutan penyangga basa

$$[OH^-] = K_b \times \frac{mol\ basa}{mol\ garam}$$

$$pOH = pK_b - log\left(\frac{mol\ basa}{mol\ garam}\right)$$

Kelarutan 2 ion (1 : 1)

$$s = \sqrt{K_{sp}}$$

Kelarutan 3 ion (1 : 2)

$$s = \sqrt[3]{\frac{K_{sp}}{4}}$$

Kelarutan 4 ion (1 : 3)

$$s = \sqrt[4]{\frac{K_{sp}}{27}}$$

Kelarutan 5 ion (2 : 3)

$$s = \sqrt[5]{\frac{K_{sp}}{108}}$$

Persamaan Nernst:

$$E_{sel} = E^{o}_{sel} - \frac{0{,}0592}{n} \log log\ Q_c$$