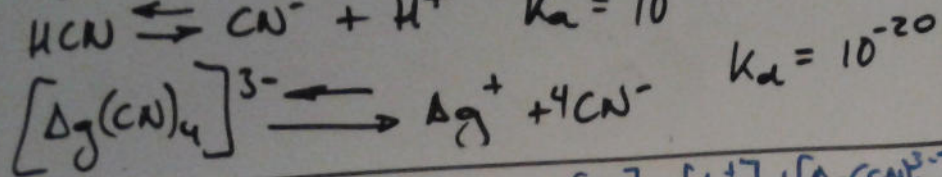
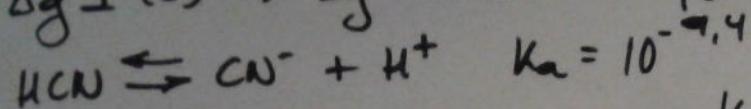
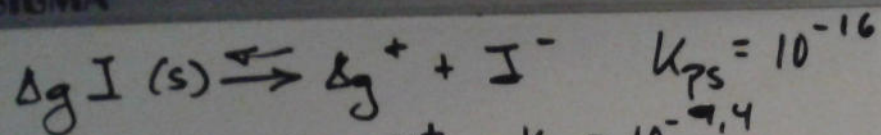


SIGMA



$$K_{ps} = [\text{Ag}^+][\text{I}^-]$$

$$K_a = \frac{[\text{CN}^-][\text{H}^+]}{[\text{HCN}]}$$

$$K_d = \frac{[\text{Ag}^+][\text{CN}^-]^4}{[[\text{Ag}(\text{CN})_4]^{3-}]}$$

$$[\text{CN}^-] = 0,01$$

$$[\text{AgI}] = 10^{-2}$$

$$[\text{I}^-] = 10^{-2} \cdot 0,001 = 10^{-5} \quad [\text{I}^-] = [\text{Ag}^+] + [\text{Ag}(\text{CN})_4^{3-}]$$

$$[\text{Ag}^+] + [\text{Ag}(\text{CN})_4^{3-}] = 10^{-5}$$

$$[\text{Ag}^+] = \frac{K_{ps}}{[\text{I}^-]} = \frac{10^{-16}}{10^{-5}} = 10^{-11}$$

$$[\text{Ag}(\text{CN})_4^{3-}] = 10^{-5} - 10^{-11} = 10^{-5}$$

$$[\text{CN}^-]^4 = K_d \frac{[\text{Ag}(\text{CN})_4^{3-}]}{[\text{Ag}^+]} = \frac{10^{-20} \cdot 10^{-5}}{10^{-11}} = 10^{-14}$$

$$[\text{CN}^-] = 10^{-14/4}$$

$$[\text{CN}^-] = 10^{-3,5}$$

$$[\text{HCN}] = [\text{CN}^-]_0 - [\text{CN}^-] = 0,01 - 10^{-3,5} = 0,01$$

$$[\text{H}^+] = K_a \frac{[\text{HCN}]}{[\text{CN}^-]} = 10^{-9,4} \cdot \frac{0,01}{10^{-3,5}} = 6,3 \cdot 10^{-9} \rightarrow \text{pH} = 7,2$$