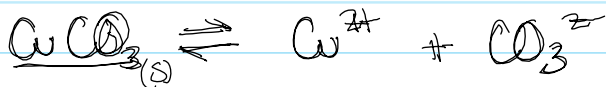


$$\text{pH} = -\log [\text{H}^+] \Rightarrow \text{pH} = -\log 4 \times 10^{-4} \text{ M}$$

$$\text{pH} = 3.39$$



$$K_{sp} = 2.3 \times 10^{-10} = [\text{Cu}^{2+}][\text{CO}_3^{2-}] = x^2$$

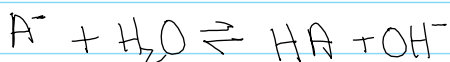
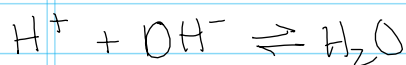
$$[\text{Cu}^{2+}] = 1.51 \times 10^{-5} \text{ M}$$

mols acid = mols base
e.g. pt

$$\text{pH} = 7$$

$$\text{pH} > 7$$

$$\text{pH} < 7$$



mol acid = mol base

$$0.02 \frac{\text{mol}}{\text{L}} \cdot 0.100 \text{ L} = 2 \times 10^{-3} \text{ mols}$$

$$2 \times 10^{-3} \text{ mols base} \times \frac{\text{L}}{0.05 \text{ mol}} = 0.04 \text{ L} = 40 \text{ mL}$$

$$M_1 V_1 = M_2 V_2$$

$$0.02 \frac{\text{mol}}{\text{L}} \cdot 100 \text{ mL} = 0.05 \frac{\text{mol}}{\text{L}} \times x \Rightarrow 40 \text{ mL}$$