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Prelab 8

Preliminary Questions

1. Write the reaction and K_{sp} expressions for following dissolving in water:
    1. Lead Iodide (PbI_2)

$$PbI_2(s) + H_2O(l) \rightarrow Pb^{2+}(aq) + 2I^-(aq)$$
$$K_{sp} = [Pb^{2+}][I^-]^2$$

    2. Calcium Iodate ($Ca(IO_3)_2$)

$$Ca(IO_3)_2(s) + H_2O(l) \rightarrow Ca^{2+}(aq) + 2IO_3^-(aq)$$
$$K_{sp} = [Ca^{2+}][IO_3^-]^2$$

2. A student performed titrations in experiment. 25 mL of $Ca(OH)_2$ was titrated with 22.7mL of 0.103 M HCl. Calculate the molar solubility and K_{sp} of $Ca(OH)_2$.

$$[OH^-] = \frac{22.7mL \times 0.103M}{25mL} = 0.09352M$$
$$[Ca^{2+}] = \frac{[OH^-]}{2} = 0.046762M$$
$$K_{sp} = [Ca^{2+}][OH^-]^2 = 0.0000409$$

3. A student performed titrations in experiemtn. 25 mL of $Ca(OH)_2$ and 0.05 M Ca^{2+} was titrated with 2.77 mL of 0.103 M HCl. Calculate molar solubility of $Ca(OH)_2$.

$$[OH^-] = \frac{2.77mL \times 0.103M}{25mL} = 0.0114M$$
$$[Ca^{2+}] = \frac{[OH^-]}{2} = 0.0057062M$$
$$K_{sp} = [Ca^{2+}][OH^-]^2 = 7.43 \times 10^{-7}$$