K_{sp} & Solubility 2 • CHEM 220

1. Consider a 100.0 mL sample of a solution that is determined to be 0.25 *M* in zinc nitrate and 0.080 *M* in silver nitrate. A concentrated solution of sodium sulfide is used to selectively precipitate the two ions.

   A) Which cation will precipitate first as a metal sulfide, and at what [Na_2S] will precipitation begin?

   B) At what [S^{2-}] will the second metal sulfide begin to form?

   C) What will be the first metal ion concentration in solution when the second metal sulfide begins to precipitate?

   D) What mass of the first metal sulfide salt will have precipitated when the second metal sulfide starts to precipitate?

2. Calculate the molar solubility of lead (II) iodide in:

   A) pure water

   B) 0.30 *M* calcium iodide solution

   C) a pH = 14.00 solution