SURREY SUPPLEMENT: SOLUBILITY

1) A solution contains 1.0×10^{-4} M Cu^{+} and 2.0×10^{-3} M Pb^{2+}.
   a) If a source of I^{-} is added to this solution, will PbI_2 ($K_{sp} = 1.4 \times 10^{-8}$) or CuI ($K_{sp} = 5.3 \times 10^{-12}$) precipitate first? **[CuI]**
   b) Specify the concentration of I^{-} necessary to begin precipitation of each compound in part (a). **[Cu^{+} requires 5.3×10^{-8} M I^{-} and Pb^{2+} requires 2.65×10^{-3} M I^{-}]**
   c) Calculate the % left in solution of the first ion to precipitate when the second ion just starts to precipitate. **[0.002% Cu^{+} remains when Pb^{2+} is just starts to precipitate.]**

2) You are to do a titration of 10.00 mL of 0.1000 M NaCl with 0.1000 M $AgNO_3$. The K_{sp} of AgCl = 1.8×10^{-10} and we will define the pCl scale as:

   pCl = - log[Cl-]

   (If you've studied acids and bases, this is the same idea as for the pH scale.)
   a) Calculate the pCl at the start of the titration. **[1.0]**
   b) Calculate the pCl after 9.00 mL of $AgNO_3$ solution have been added. **[2.28]**
   c) Calculate the pCl after 10.00 mL of $AgNO_3$ solution have been added. **[4.87]**
   d) Calculate the pCl after 11.00 mL of $AgNO_3$ solution have been added. **[7.42]**