Ksp and Molar Solubility Problems #2

1. Calculate the K_{sp} for each of the salts whose solubility is listed below.
    a. $CaSO_4$ = 5.0 x 10^{-3} mol/L

    b. MgF_2 = 2.7 x 10^{-3} mol/L

    c. $AgC_2H_3O_2$ = 1.02 g/100 mL

    d. SrF_2 = 12.2 mg/100 mL

2. Calculate the solubility in moles/L of each of three salts
    a. AgCN K_{sp} = 2.0 x 10^{-12}

    b. $BaSO_4$ K_{sp} = 1.5 x 10^{-9}

    c. FeS K_{sp} = 3.7 x 10^{-19}

3. Calculate the concentration of the cations in mg/mL in each of the saturated solutions.
    d. $Mg(OH)_2$ K_{sp}= 9.0 x 10^{-12}

    e. Ag_2S K_{sp} = 1.6 x 10^{-49}

    f. CaF_2 K_{sp} = 4.9 x 10^{-11}

4. Consider these sparingly soluble salts:
    a. PbS K_{sp} = 8.4 x 10^{-28}
    b. $PbSO_4$ K_{sp} = 1.8 x 10^{-8}
    c. $Pb(IO_3)_2$ K_{sp} = 2.6 x 10^{-13}
        i. Which is the most soluble?

        ii. Calculate the solubility in moles/L for $PbSO_4$.

        iii. How many grams of $PbSO_4$ dissolve in 1 L of solution?

        iv. How can you decrease the concentration of Pb^{2+}(aq) in a saturated solution of $PbSO_4$ solution?

v. What is the concentration in moles/L of PbS in a saturated solution of the salt?