Review Sheet for Third Exam

Topics Covered
- solubility equilibria
- effect of pH on solubility
- complexation equilibria
- effect of complexation on solubility
- rates of chemical reactions
- instantaneous rates, average rates
- rate laws, rate constants, and reaction orders
- differential rate laws, integrated rate laws and half-lives
- method of initial rates
- pseudo-order rate laws
- mechanisms and rate laws
- activation energy

Equations That You Should Know
- K_{sp}, K_n, β_n
- rate $= d[\ ]/dt = \Delta[\ ]/\Delta t$
- rate $= k[A]^{\alpha}[B]^{\beta}\cdots[C]^{\gamma}$
- $[R]_t = [R]_0 - kt$; $\ln[R]_t = \ln[R]_0 - kt$; $1/[R]_t = 1/[R]_0 + kt$
- $t_{1/2} = [R]_0/2k$; $t_{1/2} = 0.693/k$; $t_{1/2} = 1/k[R]_0$
- $k = Ze^{-E_a/RT}$
- $\ln(k) = \ln(Z) - E_a/RT$

Constants That Will Be Provided To You
- specific heat of water $= 4.184$ J/g•°C
- $R = 8.314$ J/K•mol$_{rxn}$
- $F = 96,485$ C/mol e$^-$ $= 96,485$ J/V•mol e$^-$
- $K_w = 1.00\times10^{-14}$