Problem Set 2

1) Consider the problem of electrons interacting with impurities with concentration $n_i$, assume that the interaction potential is weak and short range. Assume the system is in equilibrium, at a temperature $T$. a) Evaluate the following self energy functions:
   $\Sigma^t, \Sigma^>, \Sigma^<, \Sigma^A, \Sigma^R, \Sigma^K$
   to second order in perturbation theory in the impurity potential.

Figure 1: Second Order and First Order Self Energies