

## S and G Homework

For the first three reactions below, indicate whether you believe the entropy for the reaction is positive or negative:



*Solve the following problems regarding entropy and the spontaneity of chemical reactions:*

4) A chemical reaction has a  $H_{\text{rxn}}$  of  $-157 \text{ kJ}$  and a  $S_{\text{rxn}}$  of  $-221 \text{ J/K}$ . Is this reaction spontaneous at  $525 \text{ K}$ ?

5) At what temperature is the reaction from problem #4 at equilibrium?

6) If a chemical reaction is at equilibrium at  $298 \text{ K}$  and  $S_{\text{rxn}} = -89 \text{ J/K}$ , what is  $H_{\text{rxn}}$  for this process?

7) What is  $G$  for the reaction in problem 6 at  $398 \text{ K}$ ? Is this reaction spontaneous?