K_c and K_p

1. Write both K_p and K_c for the following reaction.

   $4\ NH_3\ (g) + 5\ O_2\ (g) \rightleftarrows 4\ NO\ (g) + 6\ H_2O\ (g)$

2. The following reaction has $K_c = 18.7$. Calculate K_p at the same temperature. Once equilibrium has been reached, are products or reactants favored?

   $SO_2\ (g) + Cl_2\ (g) \rightleftarrows SO_2Cl_2\ (g)$

3. Use the data below to calculate K for the following reaction at 25.0 °C.

   $N_2\ (g) + O_2\ (g) + Br_2\ (g) \rightleftarrows 2\ NOBr\ (g)$ K = ?

   $2\ NO\ (g) + Br2\ (g) \rightleftarrows NOBr\ (g)$ Kc = 2.0
   $2\ NO\ (g) \rightleftarrows N_2\ (g) + O_2\ (g)$ $K_c = 2.1 \times 10^{30}$

4. The following reaction has $K_p = 49$ at 729 K

   $H_2\ (g) + I_2\ (g) \rightleftarrows 2\ HI\ (g)$

   Calculate K_c.