AP Chemistry Exam Review

Free Response Practice #6

1. $NH_4HS(s) \leftrightarrow NH_3(g) + H_2S(g)$ $\Delta H^\circ = +93$ kilojoules

The equilibrium above is established by placing solid NH_4HS in an evacuated container at 25ºC. At equilibrium, some solid NH_4HS remains in the container. Predict and explain each of the following.

a) The effect on the equilibrium partial pressure of NH_3 gas when additional solid NH_4HS is introduced into the container.

b) The effect on the equilibrium partial pressure of NH_3 gas when additional solid H_2S is introduced into the container. (Hint: H_2S(s) readily sublimes into H_2S(g).)

c) The effect on the mass of solid NH_4HS present and the value of the equilibrium constant when the volume of the container is decreased.

d) The effect on the mass of solid NH_4HS present and the value of the equilibrium constant when the temperature is increased.