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## 125 Chapter 15 Homework

1. An equilibrium mixture, at $900^{\circ} \mathrm{C}$ in a 1725 mL container, involving the chemical system

$$
\mathrm{CH}_{4(\mathrm{~g})}+2 \mathrm{H}_{2} \mathrm{~S}_{(\mathrm{g})} \rightleftharpoons \mathrm{CS}_{2(\mathrm{~g})}+4 \mathrm{H}_{2(\mathrm{~g})}
$$

is found to contain $17.6 \mathrm{~g} \mathrm{CH}_{4}, 50.8 \mathrm{~g} \mathrm{H}_{2} \mathrm{~S}, 83.8 \mathrm{~g} \mathrm{CS}_{2}$, and $8.10 \mathrm{~g} \mathrm{H}_{2}$. Calculate the equilibrium constant for this reaction at the given temperature.
2. An equilibrium mixture, at $472{ }^{\circ} \mathrm{C}$ in a 1325 mL container, involving the chemical system

$$
\mathrm{N}_{2(\mathrm{~g})}+3 \mathrm{H}_{2(\mathrm{~g})} \rightleftharpoons 2 \mathrm{NH}_{3(\mathrm{~g})}
$$

is found to contain $4.23 \mathrm{~g} \mathrm{~N}_{2}, 0.915 \mathrm{~g} \mathrm{H}_{2}$, and $0.496 \mathrm{~g} \mathrm{NH}_{3}$. Calculate the equilibrium constant for this reaction at the given temperature.
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