"TRY YOURSELF" PROBLEMS FROM STUDY SECTION 7.5

Try Yourself 7.5 a

The following reaction have the indicated equilibrium constant at 100°C:

$$2NOBr(g) = 2NO(g) + Br_2(g)$$

$$K_c = 0.014$$

Determine the equilibrium expression, and value for K_c for the following reactions:

a)
$$2NO(g) + Br_2(g) + 2NOBr(g)$$

b)
$$4NOBr(g) \iff 4NO(g) + 2Br_2(g)$$

c) NOBr (g)
$$\Rightarrow$$
 NO (g) + $\frac{1}{2}Br_2$ (g)

Try Yourself 7.5 b

Given these equilibrium reactions and constants,

(1)
$$N_2(g) + O_2(g) \leftrightarrows 2NO(g)$$

$$K_{\rm C1} = 4.3 \times 10^{-25}$$

(2)
$$2NO(g) + O_2(g) = 2NO_2(g)$$

$$K_{\rm C2} = 6.4 \times 10^9$$

Nitrogen dioxide is a toxic pollutant that contributes to photochemical smog. Calculate the equilibrium constant, K_{C3} , for the overall reaction, given that the K_c 's occur at the same temperature.