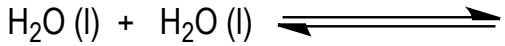
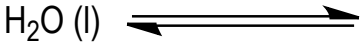
CONCEPT: AUTO-IONIZATION

Water can react with itself in a reaction called ***self–ionization*** where _____ and _____ are produced.



This reaction is usually written more simply as:



The equilibrium constant for water is called the _____ (K_W) for water and is given by the following:

$$K_W = [H^+][OH^-]$$

At 25^{o}C, K_W = _____, but remember K_W, like all other equilibrium constants K, is temperature dependent.

EXAMPLE 1: At 0^{o}C, the Kw for a neutral solution is recorded as 1.2 x 10^{-15}. Based on what you've reviewed, what can be said in terms of K_w and the solution?

a) The reaction is exothermic.

b) The reaction is endothermic.

c) The reaction is thermoneutral.

d) Not enough information is given.

EXAMPLE 2: Determine the concentration of hydronium ions for pure water at 50^{o}C. K_w is 5.3 x 10^{-14}.