

A) At 25 °C  $K_w = 1.0 \cdot 10^{-14}$

Given the following equation:



The autoionization of  $\text{H}_2\text{O}$  is

- 1) exothermic
- 2) endothermic**
- 3) cannot tell

B) If we increase the temperature from 25 °C to 50 °C  $K_w^{50}$  is going to be

**1) higher than  $K_w^{25}$**  The reaction moves to the right (Le Chatelier principle), the concentration of  $\text{H}_3\text{O}^+$  and  $\text{HO}^-$  increase, then  $K_w$  increase.

- 2) lower than  $K_w^{25}$
- 3) equal than  $K_w^{25}$

C) At 50 °C from the reaction in A)

- 1)  $[\text{H}_3\text{O}^+] > [\text{OH}^-]$
- 2)  $[\text{H}_3\text{O}^+] < [\text{OH}^-]$
- 3)  $[\text{H}_3\text{O}^+] = [\text{OH}^-]$**
- 4) cannot tell