The ionic product of water

Pre-lesson assignment textbook page 326-328

Define the following term

- Ionic product of water (use an equation and give a value)

Make notes on the ionic product of water

Use the following questions as guidance.

1. Write an equation showing water molecules acting as both a base and acid at the same time.
2. Simplify this equation and write an equilibrium expression for K_a for water when behaving as a weak acid.
3. Explain why $[H_2O_{(l)}]$ is treated as a constant. Rearrage the expression to show how the ionic product of water K_w is derived.
4. Demonstrate that the pH of water at 25°C is 7
5. Define the terms 'acidic' 'alkaline' and 'neutral' in terms of $[H^+]$ and $[OH^-]$
6. Demonstrate how pH and K_w can be used to find $[H^+]$ and $[OH^-]$
7. Demonstrate how $[H^+]$ or $[OH^-]$ and K_w can be used to find pH.