Question #63230, Chemistry / General Chemistry

The pH of a solution of a strong base is 10.27 at 25°C. What is its hydronium-ion concentration?

Solution:

$$pH = -\log[H^+]$$
$$[H^+] = 10^{-pH}$$
$$[H^+] = 10^{-10.27} = 5.37 \times 10^{-11}\ M$$
$$K_w = [H^+] \times [OH^-]$$
$$[OH^-] = \frac{K_w}{[H^+]}$$
$$[OH^-] = \frac{10^{-14}}{5.37 \times 10^{-11}} = 1.86 \times 10^{-4}$$

Answer*:*

$$\mathbf{1.86 \times 10^{-4}\ M}$$