12. Find the pH of each solution:

    A. $[H^+] = 0.045$ M

    B. $[H^+] = 8.7 \times 10^{-6}$ M

    C. $[H^+] = 0.0015$ M

    D. $[H^+] = 1.2 \times 10^{-3}$ M

13. What are the pH values of the following solutions, based on their hydrogen-ion concentrations?

    A. $[H^+] = 1.0 \times 10^{-12}$ M

    B. $[H^+] = 1.0 \times 10^{-4}$ M

14. Calculate the $[H^+]$ for each solution:

    A. pH = 5.00

    B. pH = 12.83

15. What are the hydrogen-ion concentrations for solutions with the following pH values?

    A. 4.00

    B. 11.55

16. Calculate the pH of each solution:

    A. $[OH^-] = 4.3 \times 10^{-5}$ M

    B. $[OH^-] = 4.5 \times 10^{-11}$ M

17. Calculate the pH of each solution:

    A. $[OH^-] = 5.0 \times 10^{-9}$ M

    B. $[OH^-] = 8.3 \times 10^{-4}$ M

22. Determine the pH of each solution:

    A. $[H^+] = 1.0 \times 10^{-6}$ M

    B. $[H^+] = 0.00010$ M

    C. $[OH^-] = 1.0 \times 10^{-2}$ M

    D. $[OH^-] = 1.0 \times 10^{-11}$ M

24. Find the hydroxide-ion concentrations for solutions with the following pH values:

    A. 6.00   B. 9.00   C. 12.00

63. Calculate the pH for the following solutions and indicate whether each solution is acidic or basic:

    A. $[OH^-] = 1.0 \times 10^{-2}$ M

    B. $[H^+] = 1.0 \times 10^{-2}$ M

64. What are the hydroxide-ion concentrations for solutions with the following pH values?

    A. 4.00   B. 8.00   C. 12.00

65. Calculate the pH or $[H^+]$ for each solution:

    A. $[H^+] = 2.4 \times 10^{-6}$ M   B. pH = 13.20

86. Calculate the $[OH^-]$ or pH of each solution:

    A. pH = 4.60   C. $[OH^-] = 1.8 \times 10^{-2}$ M

    B. pH = 9.30   D. $[OH^-] = 7.3 \times 10^{-9}$ M