Answer on Question #50411, Chemistry, Other

Task:

a) **What is the pH of a solution whose $[H_3O^+]$ is 1 X 10 $^{-6}$ M?**
b) **What is the pH of a solution whose $[H_3O^+]$ concentration is 3.2 X 10^{-4} M?**
c) **What is the pH of a solution with a $[H_3O^+]$ concentration of 1.5 X 10 $^{-13}$ M?**
d) **Find the pH of a solution whose $[H_3O^+]$ is 6.5 X 10 $^{-4}$ M.**
e) **Find the pH of a solution whose pOH is 5.36.**
f) **What is the pOH of a solution with a $[OH^-]$ concentration of 9.7 X 10 $^{-11}$ M?**
g) **Calculate the pH of a solution with a $[OH^-]$ concentration of 2.3 X 10 $^{-7}$ M.**

Answer:

a)
$$pH = -\lg[H_3O^+]$$
$$pH = -\lg[1 \cdot 10^{-6}] = 6$$

b)
$$pH = -\lg[H_3O^+]$$
$$pH = -\lg[3.2 \cdot 10^{-4}] = 3.5$$

c)
$$pH = -\lg[H_3O^+]$$
$$pH = -\lg[1.5 \cdot 10^{-13}] = 12.8$$

d)
$$pH = -\lg[H_3O^+]$$
$$pH = -\lg[6.5 \cdot 10^{-4}] = 3.2$$

e)
$$pH + pOH = 14$$
$$pH = 14 - pOH = 14 - 5.36 = 8.64$$

f)
$$pOH = -\lg[OH^-]$$
$$pOH = -\lg[9.7 \cdot 10^{-11}] = 10$$

g)
$$pOH = -\lg[OH^-]$$
$$pOH = -\lg[2.3 \cdot 10^{-7}] = 6.6$$

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