

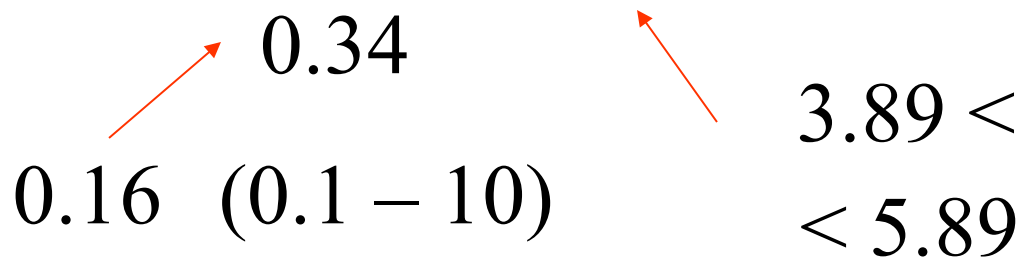
Calculate the pH of a buffer prepared by mixing:

40.0 mL of 1.0 M $\text{C}_2\text{H}_5\text{OOH}$ $K_a = 1.3 \times 10^{-5}$

60.0 mL of 0.1 M NaOH $\text{p}K_a = -\log(1.3 \times 10^{-5})$

$$\text{pH} = \text{p}K_a + \log \frac{[\text{C}_2\text{H}_5\text{COO}^-]}{[\text{C}_2\text{H}_5\text{OOH}]}$$

$$\text{pH} = 4.89 + \log \frac{0.06}{0.34} = 4.14$$



$$0.16 \quad (0.1 - 10) \quad 3.89 < < 5.89$$

$$[\text{C}_2\text{H}_5\text{OOH}] = 0.34 \text{ M} \quad [\text{C}_2\text{H}_5\text{OO}^-] = 0.06 \text{ M}$$