

Weak Acid (HA) $K_a = 2.0 \times 10^{-5}$ 50 mL of 0.10 M HA
 + 24 mL of 0.10 M NaOH. pH = ?

Chemistry: (2 steps) 1st Rxn. $HA + NaOH \rightarrow H_2O + NaA + X^?$

1. moles HA: $\frac{50 \text{ mL} \times 0.10 \text{ mol/L HA}}{1000 \text{ mL}} = 5.0 \times 10^{-3} \text{ mol HA}$

2. moles OH^- : $\frac{24 \text{ mL} \times 0.10 \text{ mol/L } OH^-}{1000 \text{ mL}} = 2.4 \times 10^{-3} \text{ mol } OH^- = \text{mol } A^-$

Chemistry: $\xrightarrow{(x)}$ $HA + H_2O \rightleftharpoons A^- + H_3O^+$

$K_a = \frac{x(0.0324 - x)}{0.0351 - x}$	Try to Drop	I. $\frac{2.6 \times 10^{-3} \text{ mol}}{0.074 \text{ L}}$	N/A	$\frac{2.4 \times 10^{-3} \text{ mol}}{0.074 \text{ L}}$	0
		C. $-x$		$+x$	$+x$
$X = [H_3O^+] = 2.17 \times 10^{-5}$		E. $0.0351 - x$		$0.0324 + x$	x

pH = $-\log x = 4.66$

Continued:

H. H ϵ_g $HA + H_2O \rightleftharpoons A^- + H_3O^+$
 $NaA \rightarrow A^- + Na^+$ C.B. $H^+ \rightleftharpoons HA$

pH = $-\log 2.0 \times 10^{-5} + \log \frac{2.4 \times 10^{-3}}{2.6 \times 10^{-3}}$

W.A. $\frac{A^-}{HA}$

Buffer: try adding 4×10^{-4} mole HCl + check pH
 (Assume no volume change)

pH = $-\log 2.0 \times 10^{-5} + \log \frac{2.4 \times 10^{-3} - 4 \times 10^{-4}}{2.6 \times 10^{-3} + 4 \times 10^{-4}}$

pH = 4.52