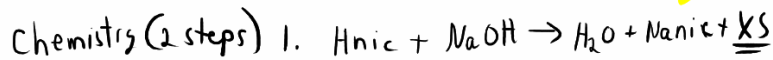


Hnic $K_a = 1.4 \times 10^{-5}$, pH when 25.0 mL of 0.100 M Hnic is combined with 10.00 mL of 0.100 M NaOH. ✓ ✓



a. moles Hnic: $\frac{25.00 \text{ mL} \times 0.100 \text{ mol Hnic}}{1000 \text{ mL}} = 0.00250 \text{ mole Hnic}$

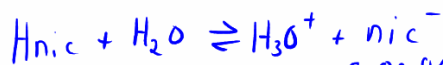
b. moles OH^- : $\frac{10.00 \text{ mL} \times 0.100 \text{ mol NaOH}}{1000 \text{ mL}} = 0.00100 \text{ mole OH}^-$
 (mol Hnic) $\frac{0.00100 \text{ mol NaOH}}{1 \text{ NaOH}} = 0.00100 \text{ mole OH}^-$
 0.00150 mol XS Hnic

change to conc. $\frac{0.00150 \text{ mol Hnic}}{0.035 \text{ L}} = 0.0429 \text{ M Hnic (XS)}$

$\frac{0.00100 \text{ mol nic}^-}{0.035 \text{ L}} = 0.0286 \text{ M nic}^-$

Use these values for starting the I.C.E. chart.

Continued



$K_a = \frac{[x][0.0286+x]}{0.0429-x}$	I	0.0429	NA	0	0.0286
$1.4 \times 10^{-5} = \frac{x(0.0286+x)}{0.0429}$	C	-x		+x	+x
	E	0.0429-x		x	0.0286+x

$x = 0.000021 = [\text{H}_3\text{O}^+]$

$\text{pH} = 4.68$