

6.48 c 10ml 0.0105 M Ca(OH)_2 diluted to 500 ml

$\text{Ca(OH)}_2 \rightarrow \text{Ca}^{+2} + 2\text{OH}^-$
 \uparrow \uparrow
 $2.1 \times 10^{-4} \text{ M}$ $4.2 \times 10^{-4} \text{ M} \equiv [\text{OH}^-]$

$\text{pOH} = -\log[\text{OH}^-]$
 $\text{pH} + \text{pOH} = 14$
 $\text{pH} = 10.623$ ✓

Moles Start = Moles end
 $M \times Q = M \times Q$
 $(0.0105)(10 \text{ ml}) = M(500)$
 $M = 2.1 \times 10^{-4} \text{ M}$
 Ca(OH)_2

dilution formula

Mar 2-7:40 AM

Dilutions

Moles start = Moles end
 $M \times Q = M \times Q$

Titration

Moles Acid = Moles Base
 $n_A \times M \times Q = n_B \times M \times Q$

Mar 2-7:57 AM

(16.64) 2.2×10^{-2} $K_a = 3.3 \times 10^{-4}$ (25°C)
 $\text{HA} \rightleftharpoons \text{H}^+ + \text{A}^-$

I	0.022	0	0
D	-x	+x	+x
E	0.022-x	x	x

 $K_a = \frac{[\text{H}^+][\text{A}^-]}{[\text{HA}]} = 3.3 \times 10^{-4}$
 $\frac{(x)(x)}{0.022-x} = \frac{3.3 \times 10^{-4}}{1}$

$2(500\text{mg})$ in $250\text{ml H}_2\text{O}$
 $\frac{1000\text{mg HC}_9\text{H}_7\text{O}_4}{0.25\text{L}} = 1 \text{ mole ASA} = 0.022\text{M}$
 188g ASA

$x^2 + 3.3 \times 10^{-4}x - 7.33 \times 10^{-6} = 0$
 $x = 0.00255\text{M} = [\text{H}^+]$
 $\text{pH} = -\log([\text{H}^+])$
 $\text{pH} = 2.59$

Mar 2-7:59 AM

$\text{HA} + \text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{A}^-$ $K_a = \frac{[\text{H}_3\text{O}^+][\text{A}^-]}{[\text{HA}]}$
 $\text{A}^- + \text{H}_2\text{O} \rightleftharpoons \text{HA} + \text{OH}^-$ $K_b = \frac{[\text{HA}][\text{OH}^-]}{[\text{A}^-]}$

$2\text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{OH}^-$
 $\text{H}_2\text{O} \rightleftharpoons \text{H}^+ + \text{OH}^-$ K_w

$K_w = K_a * K_b$

Mar 2-8:09 AM

Find pH of 1M NaF

Soluble salt: $\text{NaF} \rightarrow \text{Na}^+ + \text{F}^-$
 1M 1M 1M

BASE: $\text{F}^- + \text{H}_2\text{O} \rightleftharpoons \text{HF} + \text{OH}^-$ (Conj. Acid)

F^-	1M			
	-x		+x	+x
	1-x		x	x

$K_b = \frac{[\text{HF}][\text{OH}^-]}{[\text{F}^-]} = \frac{(x)(x)}{1-x} = 1.47 \times 10^{-11}$

$K_b = \frac{1 \times 10^{-14}}{6.8 \times 10^{-4}} = 1.47 \times 10^{-11}$

$(\text{OH}^-) = 3.83 \times 10^{-6}$

$\text{pOH} = -\log(\text{OH}^-) = 5.42$

$\text{pOH} + \text{pH} = 14 \rightarrow 8.58 \text{ pH}$

Notes: No H^+ , No OH^- , ADD HOH , H_2O , P1115 + 1116, $K_a \times K_b = K_w$

Mar 2-8:15 AM

16 / 76 + 78

Mar 2-8:26 AM