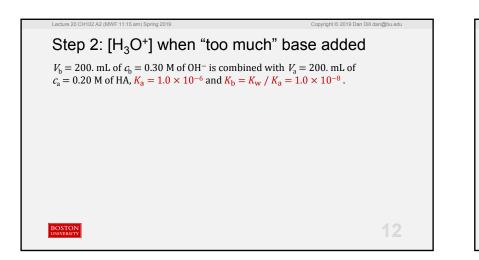


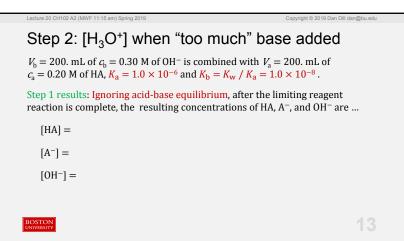
Step 2: $[H_3O^+]$ when "just enough" base added At 25 °C, $V_b = 200$. mL of $c_b = 0.30$ M of OH^- is combined with $V_a = 100$. mL of $c_a = 0.60$ M of HA, $K_a = 4.0 \times 10^{-6}$ and $K_b = K_w / K_a = 2.5 \times 10^{-9}$.						
		A ⁻ (<i>aq</i>)	HA(aq)	0H ⁻ (<i>aq</i>)	Q	
	Initial	0.20	0	10-7	$0 < K_{\rm b}$	
	Change					
	Equilibrium					
	Approximate					

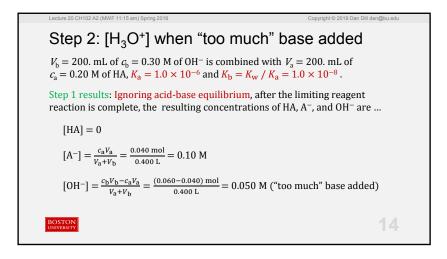
At 25 °C, $V_b = 200$. mL of $c_b = 0.30$ M of OH ⁻ is combined with $V_a = 100$. mL of $c_a = 0.60$ M of HA, $K_a = 4.0 \times 10^{-6}$ and $K_b = K_w / K_a = 2.5 \times 10^{-9}$.						
	Initial	0.20	0	10-7	$0 < K_{\rm b}$	
	Change	-x	+x	+x		
	Equilibrium	0.20 - x	x	$10^{-7} + x$	Kb	
	Approximate	≈ 0.20	x	$\approx x$	Kb	

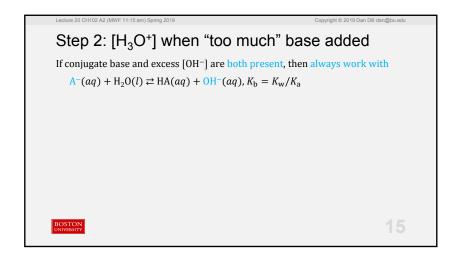
Lecture 20 CH102 A2 (MWF 11:15 am) Spring 2019 Copyright © 2019 Dan Dill dan@bu.edu Step 2: [H ₃ O ⁺] when "just enough" base added						
At 25 °C, $V_b = 200$. mL of $c_b = 0.30$ M of OH ⁻ is combined with $V_a = 100$. mL of $c_a = 0.60$ M of HA, $K_a = 4.0 \times 10^{-6}$ and $K_b = K_w / K_a = 2.5 \times 10^{-9}$.						
	Initial	0.20	0	10-7	$0 < K_{\rm b}$	
	Change	-x	+x	+x		
	Equilibrium	0.20 - x	x	$10^{-7} + x$	Kb	
	Approximate	≈ 0.20	x	$\approx x$	Kb	
	$[] = x = \sqrt{K_{\rm b}} >$ $[] = K_{\rm w} / [OH]$				-5	
BOSTO						10

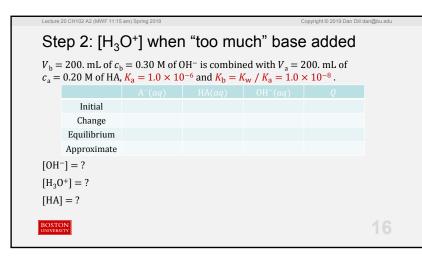


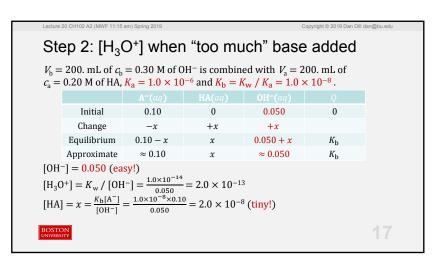


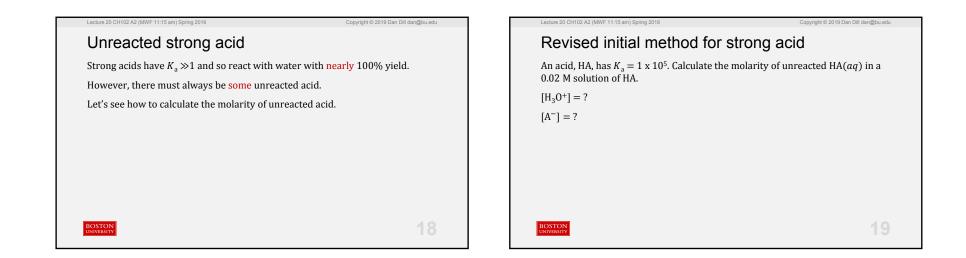


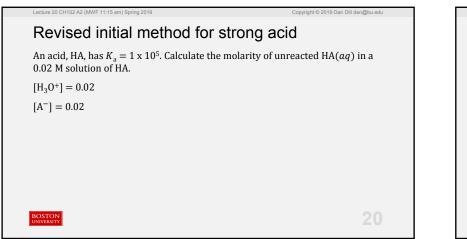












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Revised initial method for strong acid	d
An acid, HA, has $K_a = 1 \ge 10^5$. Calculate the molarity of unr 0.02 M solution of HA.	eacted $HA(aq)$ in a
$[H_3O^+] = 0.02$	
$[A^{-}] = 0.02$	
[HA] = ?	
BOSTON UNIVERSITY	21

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Revised initial method for strong	acid
An acid, HA, has $K_a = 1 \ge 10^5$. Calculate the molarity 0.02 M solution of HA.	of unreacted HA(<i>aq</i>) in a
$[H_30^+] = 0.02$	
$[A^-] = 0.02$	
$[HA] = 4 \times 10^{-9}$	
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