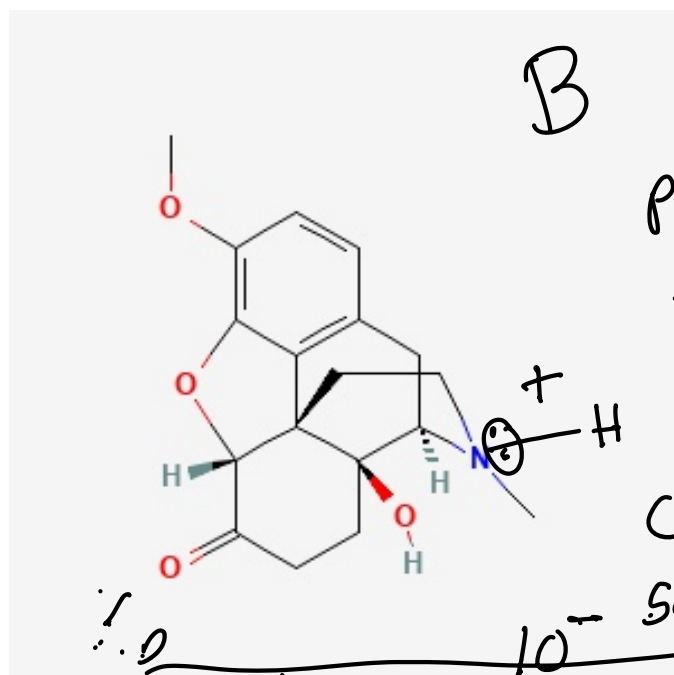




B

Conj. BH^+
 $pK_b = -\log(K_b)$

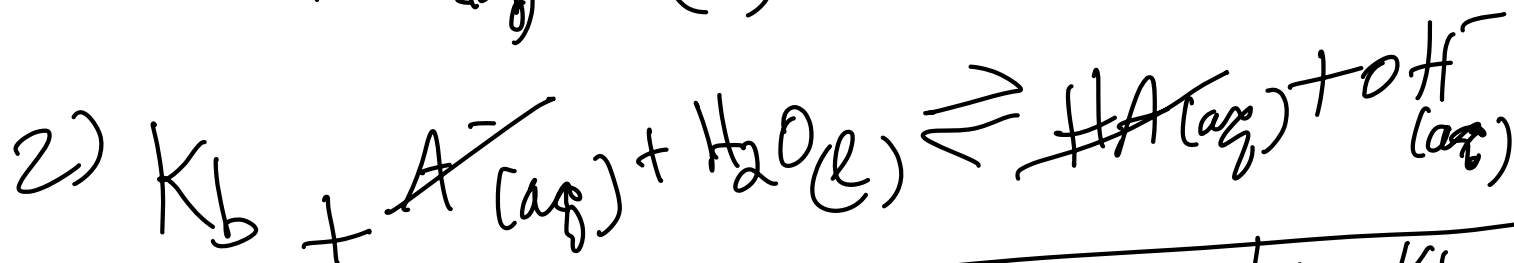
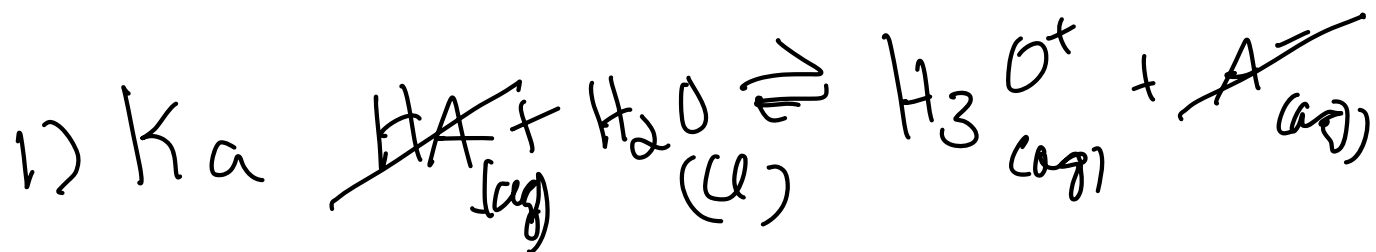
$pK_b = 5.47$

Cl^- $K_b = 2$

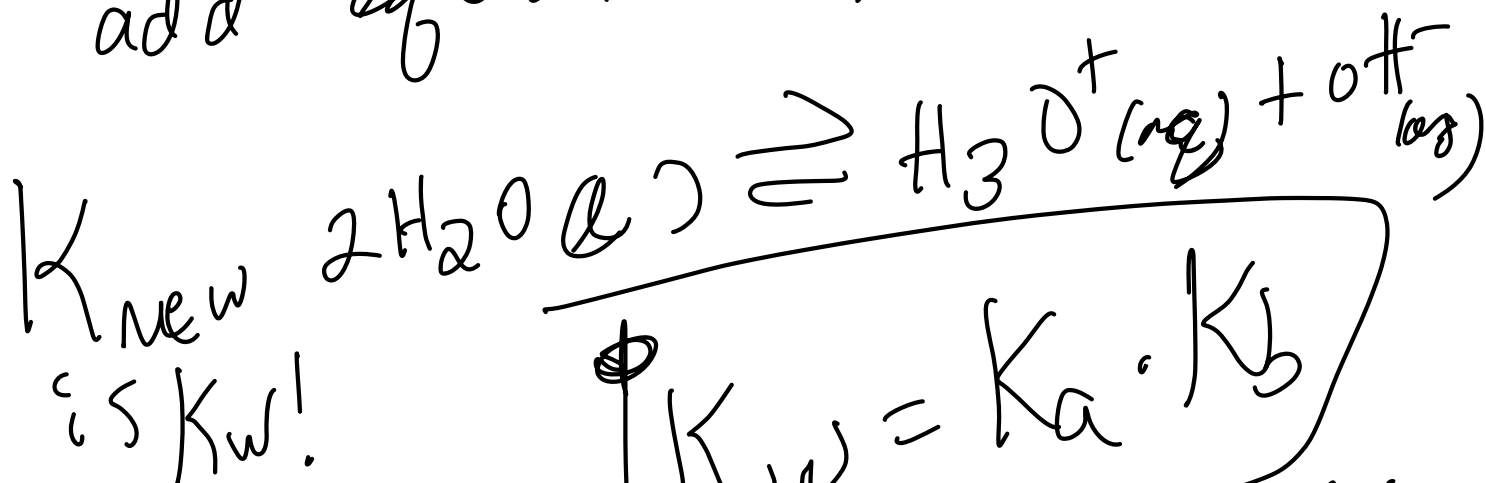
$K_b = 3.4 \times 10^{-6}$

What is the K_a of BH^+ ?
 Oxycodone-HCl is the chloride salt of
 the conjugate acid!
 $BH^+ Cl^-$

relationship between K_a & K_b



add equations, multiply $K_a \times K_b$



$$K_w = K_a \cdot K_b$$

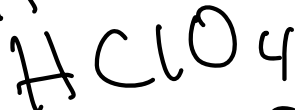
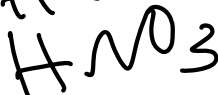
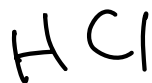
@ 25.0°C $K_w = 1.0 \times 10^{-14}$

$pK_a = 2$ lower pK_a larger K_a
 $pK_a = 5$ higher pK_a smaller K_a
 lower pK_b larger K_b
 higher pK_b smaller K_b

$K_a = 10^{-2}$
 $K_a = 10^{-5}$

7/17 Lecture recap

- Brønsted Lowry theory of acids & bases most used Ch 104
- Identify if a Lewis or Lewis base (do not need to write reaction)
- strong acids



* strong for 1st ionization only

- strong bases any group 1 cation + OH^-
and $\text{Sr}(\text{OH})_2$ & $\text{Ba}(\text{OH})_2$

- Determine the pH, $[\text{H}_3\text{O}^+]$ and/or $[\text{OH}^-]$ for a strong acid or base

100% ionization



Example: What is the pH of a 1.0 M solution?

$$pH = -\log([H_3O^+])$$

$$pH = -\log(1)$$

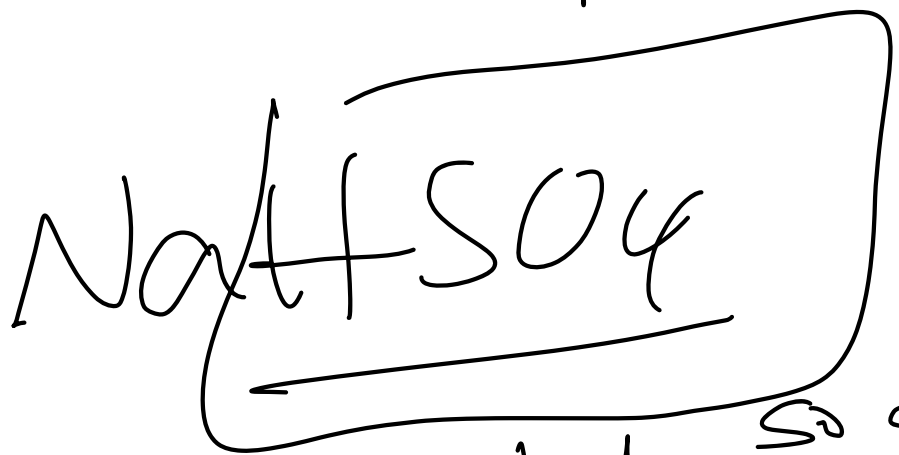
$$pH = 0$$

• Determine the pH of a weak acid or weak base solution
~~★~~ ICE chart

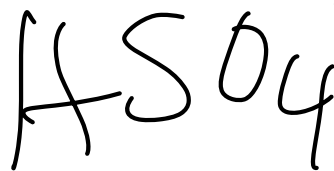
• Determine the K_a or K_b for a weak acid or weak base given the pH of the solution
pH is the $[H_3O^+]_{eq}$
~~★~~ ICE chart

Hydrolysis of Salts

- Determine the pH of a salt solution
- Classifying a salt solution as acidic, basic or neutral
 - ↳ write an equation to explain



pH $\sim$ 1 or less $\rightarrow$ So acts as an acid



acidic solution

~~Na⁺~~