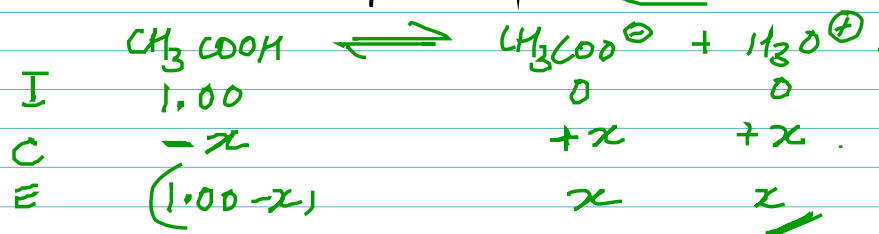


Same stuff

Acid-base Eq (1): Calculating pH of acid (1)

* Calculate the expected pH of 1.00M CH_3COOH ($K_a = 1.8 \times 10^{-5}$)



$$K_a = 1.8 \times 10^{-5} = \frac{(x)(x)}{(1.00-x)} = \frac{[\text{H}_3\text{O}^+][\text{CH}_3\text{COO}^-]}{[\text{CH}_3\text{COOH}]}$$

ignore x b/c it's small.
take square root of both sides.

$$\sqrt{1.8 \times 10^{-5} = \frac{x^2}{1.00}}$$

$$x = 4.2 \times 10^{-3}$$

$$\text{pH} = -\log 4.2 \times 10^{-3} = \boxed{2.38}$$

ignoring x.
(4) if dissociation $x < 5\%$ of M of acid.

$$5\% \text{ of } 1.00 = \underline{0.05} \quad x = 4.2 \times 10^{-3}$$

if less than 5%
then ignore.

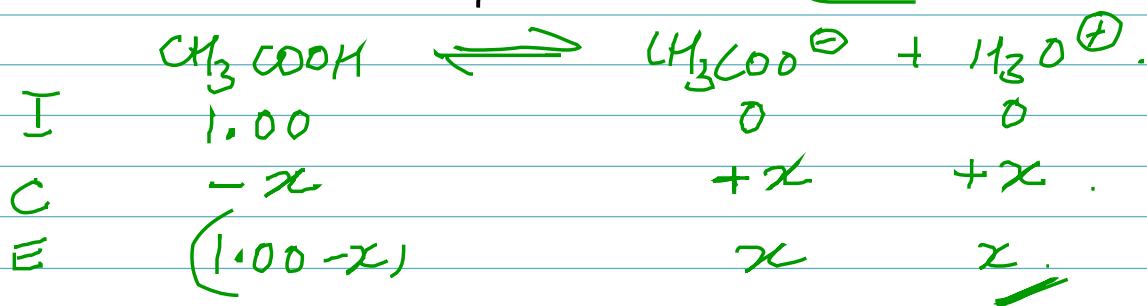
(b) $\frac{M_{\text{acid}}}{K_a} > 100$ then ignore x

$$\left[\frac{1.00}{1.8 \times 10^{-5}} \gg 100 \right] \text{ ignore } x$$

Sample

Acid-base Eq 1. Calculating pH of acid 1.

* Calculate the expected pH of 1.00M CH_3COOH ($K_a = 1.8 \times 10^{-5}$).



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