4.9 Ka & Kb in Conjugate Pairs

Acid Ionization

$NH_4^+ + H_2O \rightleftharpoons NH_3 + H_3O^+$

$K_a =$

Base Ionization

$NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$

$K_b =$

Relationship $K_a \times K_b =$ $\dfrac{[NH_3][H_3O^+]}{[NH_4^+]}$ (Ka expression) $\times$ $\dfrac{[NH_4^+][OH^-]}{[NH_3]}$ (Kb expression)

Try the Math $K_a \times K_b = K_w$

This Eqn allows you to find Kb for weak bases using Ka in table

For a Conjugate Pair **$K_a \times K_b = K_w$**

Example: Calculate Kb for $H_2PO_4^-$

Do 4.9 Pg 130 #35 -37