Worksheet 7 **K_b For Weak Bases**

Determine the K_b for each weak base. Write the ionization reaction for each. Remember that $K_w = K_a \cdot K_b$ (the acid and base must be conjugates). Find the base on the right side of the acid table and use the K_a values that correspond. Be careful with amphiprotic anions! The first one is done for you.

$NaNO_2$ (the basic ion is NO_2^-)

$$Kb(NO_2^-) = \frac{Kw}{Ka(HNO_2)} = \frac{1.0 \times 10^{-14}}{4.6 \times 10^{-4}} = 2.2 \times 10^{-11}$$

KCH_3COO (the basic ion is CH_3COO^-)

$NaHCO_3$

NH_3

NaCN

Li_2HPO_4

KH_2PO_4

Calculate the pH of a saturated $Mg(OH)_2$ solution (Hint: you need the Ksp).

For each weak base, calculate the $[OH^-]$, $[H^+]$, pOH and pH. Remember that you need to calculate Kb first.

0.20 M CN^-

0.010 M NaHS (the basic ion is HS^-)

0.067 M KCH_3COO

0.40 M $KHCO_3$

0.60 M NH_3

0.560 M $NaHSO_4$

The pH of 0.65 M NaX is 12.46. Calculate the Kb for NaX.