

Using the [Base Dissociation Constants](#) table, order the following bases from strongest to weakest. (Use the appropriate <, =, or > symbol to separate substances in the list.)



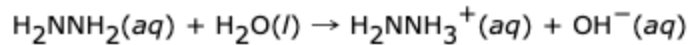
chemPad Help

X_{\square} X^{\square} \rightarrow \rightleftharpoons \leftarrow Greek ▾

X*

The components in your answer are not in the expected order.

For the reaction of hydrazine (N_2H_4) in water, K_b is 3.0×10^{-6} .



Calculate the concentrations of all species and the pH of a **1.9 M** solution of hydrazine in water. (Enter unrounded values.)

$[\text{OH}^-]$  M

$[\text{H}_2\text{NNH}_3^+]$  M

$[\text{H}_2\text{NNH}_2]$  M

$[\text{H}^+]$  M

pH 

Calculate $[\text{OH}^-]$, $[\text{H}^+]$, (in M) and the pH of $0.32 M$ solutions of each of the following amines (the K_b values are found in [the table of \$K_b\$ values for common weak bases.](#)) (Enter unrounded values. Assume $K_w = 1.00 \times 10^{-14}$.)

(a) aniline

$[\text{OH}^-]$ \times M

$[\text{H}^+]$ \times M

pH \times M

(b) methylamine

$[\text{OH}^-]$ \times M

$[\text{H}^+]$ \times M

pH \times M

Strychnine is a naturally occurring compound that is highly toxic, in particular to birds and rodents, and is therefore used as a rodenticide. The formula of **strychnine** is $C_{21}H_{22}N_2O_2$, and the pK_b is

5.74. Calculate the pH of a **10.0** mL solution containing **7.0** mg of **strychnine** ($pK_b = -\log(K_b)$). (Assume $K_w = 1.00 \times 10^{-14}$.)

The pH of a **0.041 M** aqueous solution of **2,6-dimethylpyridine** ($\text{C}_7\text{H}_9\text{N}$) is **9.63**. Calculate K_b . (Assume $K_w = 1.00 \times 10^{-14}$.)

2.53 ??10-8



Your answer cannot be understood or graded. [More Information](#)

Calculate the mass of HONH_2 required to dissolve in enough water to make **243.0** mL of solution having a pH of **10.01** ($K_b = 1.1 \times 10^{-8}$).

g

Calculate the pH and $[S^{2-}]$ in a **0.13** M H_2S solution. Assume $K_{a_1} = 1.0 \times 10^{-7}$; $K_{a_2} = 1.0 \times 10^{-19}$.

pH



$[S^{2-}]$

M

Calculate the pH of a **1.65** M H_2SO_4 solution.

3.41



Arrange the following 0.10 M solutions in order from most acidic to most basic. (Use the appropriate <, =, or > symbol to separate substances in the list.)

NaClO₂, HClO₂, H₂NNH₃Cl, HCl, NH₄ClO₂, and BaF₂

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X_□ X[□] → ⇌ ← Greek ▾

Calculate the concentrations of all species present in a **0.23 M** solution of ethylammonium chloride ($\text{C}_2\text{H}_5\text{NH}_3\text{Cl}$).

$[\text{C}_2\text{H}_5\text{NH}_2]$  M

$[\text{H}^+]$  M

$[\text{C}_2\text{H}_5\text{NH}_3^+]$  M

$[\text{Cl}^-]$  M

$[\text{OH}^-]$  M

Calculate the pH of each of the following solutions.

(a) **0.16 M** KNO_2

(b) **0.37 M** NaOCl

(c) **0.60 M** NH_4ClO_4


Sodium azide (NaN_3) is sometimes added to water to kill bacteria. Calculate the concentration of all species (in M) in a **0.0112** M solution of NaN_3 . The K_a value for hydrazoic acid (HN_3) is 2.5×10^{-5} .

(Assume $K_w = 1.00 \times 10^{-14}$.)

$[\text{Na}^+] =$  M

$[\text{N}_3^-] =$  M

$[\text{HN}_3] =$  **Your answer cannot be understood or graded. [More Information](#)** M

$[\text{H}^+] =$  M

$[\text{OH}^-] =$  M