

# ACIDBASE

Acid: choose box with acids and pKA values (1s)	<pre> select acid: pKA H2CO3: 6.52 H2CO3*: 10.25 H2CrO4: .74 H2CrO4*: 6.49 H2O: 14. H2O2: 11.62 H2S: 6.92 H2SO3: 1.96           </pre>	<pre> select acid: pKA H3AsO4: 11.4 H3BO3: 9.14 H3BO3*: 12.74 H3BO3*: 13.2 H3O+: 0. H3PO3: 2. H3PO3*: 6.52 H3PO4: 2.12           </pre>
Base: Choose box with bases and pKB values (1s)	<pre> select base: pKB Al(OH)3: 8.3 AgOH: 3.96 Be(OH)2: 10.3 Ca(OH)2: 1.4 CH3OH: 16.2 LiOH: .12 NaOH: -.66 NH2OH: 7.97           </pre>	<pre> select base: pKB CH3OH: 16.2 LiOH: .12 NaOH: -.66 NH2OH: 7.97 NH3: 4.75 N2H4: 5.77 Pb(OH)2: 3.02 Zn(OH)2: 3.02           </pre>
→pKA,B: acid to pKA,B value (0.1s)	<pre> RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      "HCl" 4:      pKA_HCl:(-6.) 3:      pKB_HCl:20. 2:      "H2SO4" 1:      pKA_H2SO4:(-3.)           </pre>	<pre> RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5: 4:      "NaOH" 3:      pKB_NaOH:(-.66) 2:      "Al(OH)3" 1:      pKB_Al(OH)3:8.3           </pre>
→pKB: base to pKB (0.1s)	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      "H2CO3" 4:      KA_H2CO3:.0000003 3:      KB_H2CO3:3.31131E-8 2:      "H2SO4" 1:      KA_H2SO4:1000.           </pre>	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5: 4:      "Ca(OH)2" 3:      KB_Ca(OH)2:.03981 2:      "NaOH" 1:      KB_NaOH:4.570881896           </pre>
→KA,B: acid to KA value (0.1s)	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      "H2CO3" 4:      KA_H2CO3:.0000003 3:      KB_H2CO3:3.31131E-8 2:      "H2SO4" 1:      KA_H2SO4:1000.           </pre>	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5: 4:      "Ca(OH)2" 3:      KB_Ca(OH)2:.03981 2:      "NaOH" 1:      KB_NaOH:4.570881896           </pre>
→KB: base to KB-value (0.1s)	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      "H2CO3" 4:      KA_H2CO3:.0000003 3:      KB_H2CO3:3.31131E-8 2:      "H2SO4" 1:      KA_H2SO4:1000.           </pre>	<pre> Acid   Base   +pKA   +pKB   +NA   +NB RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5: 4:      "Ca(OH)2" 3:      KB_Ca(OH)2:.03981 2:      "NaOH" 1:      KB_NaOH:4.570881896           </pre>
→pHA: pHA value (0.5s)	<pre> 6:      'HCl' 5:      .2_mol 4:      pHA(2E-1-HCl):.7 3:      'HCl' 2:      .2_mol 1:      pHB(2E-1-HCl):3.65           </pre>	<pre> RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      'NaOH' 4:      pHB(.3-NaOH):13.45 3:      "Al(OH)3" 2:      .1 1:      pHB(.1-Al(OH)3):9.3           </pre>
→pHB: pHB value (0.5s)	<pre> +pHA   +pHB   Exact   Pacid   Cacid   Exbas RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      'NaOH' 4:      pHB(.3-NaOH):13.45 3:      "Al(OH)3" 2:      .1 1:      pHB(.1-Al(OH)3):9.3           </pre>	<pre> +pHA   +pHB   Exact   Pacid   Cacid   Exbas RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 7: 6: 5:      'NaOH' 4:      pHB(.3-NaOH):13.45 3:      "Al(OH)3" 2:      .1 1:      pHB(.1-Al(OH)3):9.3           </pre>
Pacidtit: plot acid titration {HCl .1mol/l 40_ml .1_mol/l}		
weak acid: {CH3COOH .1 40 .1} (14s)		
Pbasetit: plot base titration {NaOH .1 40. .1} (14s)		
{ "NH4+" .1mol/l 40_ml .1_mol/l }		
Cacidtit: calculate acid titr. (1s)	<pre> RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 6: 5: 4: 3: { "CH3COOH" .1_mol 40 2:      20_ml 1:      pH:4.75           </pre>	<pre> RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 6: 5: 4: 3: { "NaOH" .1_mol 40_ml 2:      20_ml 1:      pH:12.5228787453           </pre>
Cbasetit: calculate base titr. (1s)	<pre> +pHA   +pHB   Exact   Pacid   Cacid   Exbas RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 6: 5: 4: 3: { "CH3COOH" .1_mol 40 2:      20_ml 1:      pH:4.75           </pre>	<pre> +pHA   +pHB   Exact   Pacid   Cacid   Exbas RAD XYZ DEC R= 'X' &lt;HOME ACIDBASE&gt; USR 6: 5: 4: 3: { "NaOH" .1_mol 40_ml 2:      20_ml 1:      pH:12.5228787453           </pre>

Abreact: choose acid base reaction	<div> <div>RAD</div> <div>CHOM</div> <div>acid base reaction</div> <div> <div>7:</div> <div>6:</div> <div>5:</div> <div>4:</div> <div>3:</div> <div>2:</div> <div>1:</div> </div> <div> <div>HC1+Cl-+H+</div> <div>H2SO4+HSO4-+H+</div> <div>H3O4-+SO42-+H+</div> <div>NH4++NH3+H+</div> <div>HN03+H2O+NO3-+H3O+</div> <div>H2O+NH3+OH-+NH4+</div> <div>H2O+OH-+H+</div> <div>H2O++H2O+H+</div> </div> <div> <div>CANCEL</div> <div>OK</div> </div> </div>	<div> <div>RAD</div> <div>CHOM</div> <div>acid base reaction</div> <div> <div>7:</div> <div>6:</div> <div>5:</div> <div>4:</div> <div>3:</div> <div>2:</div> <div>1:</div> </div> <div> <div>H3O4-+SO42-+H+</div> <div>H2SO3+HSO3-+H+</div> <div>H3PO4+H2PO4-+H+</div> <div>HF+F-+H+</div> <div>HN02+NO2-+H+</div> <div>HCOOH+HCOO-+H+</div> <div>CH3COOH+CH3COO-+H+</div> <div>H3CO3+HCO3-+H+</div> </div> <div> <div>CANCEL</div> <div>OK</div> </div> </div>
Abreact: choose acid base reaction after OK	<div> <div>RAD</div> <div>XYZ DEC R= 'X'</div> <div>CHOME ACIDBASE&gt; USR</div> <div> <div>7:</div> <div>6:</div> <div>5:</div> <div>4:</div> <div>3:</div> <div>2:</div> <div>1:</div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>HC1→Cl-+H+"</div> <div>HN02→NO2-+H+"</div> </div> <div> <div>Pbase</div> <div>Cbase</div> <div>ABreact</div> <div>ABeqn</div> <div>Lpedit</div> <div>LpKA</div> </div> </div>	<div> <div>CH+ PROTON-CONCENTRATION(MOL/L)</div> <div>F ACT.-COEFF.0&lt;F≤1( )</div> <div>R DISS.-CONST(MOL/L)</div> <div>pKA,B pH-VALUE,ACID,BASE( )</div> <div>X DISSOCIATION(MOL/L)</div> <div>CD SOL.CONC.(MOL/L)</div> <div>{ 'pH=-LOG(aH*/1.MOL/L)' 'aH*=F×</div> <div>CH+' 'pH=-LOG(R/1.MOL/L)' 'X=-.5</div> <div>×R+1(.25×R^2+N×CD)' } &lt; 'pH=0' 'aH*=0.MOL/L' 'F=0' 'CH*=0.MOL/L' 'pH=0' 'R=0.MOL/L' 'X=0.MOL/L' 'CD=0.MOL/L' } &gt;</div> <div> <div>GRAPH</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>OK</div> </div> </div>
HelpACIDBASE: help	<div> <div>ACIDBASE: REACTIONS</div> <div>ACID+BASE+H*, H*=PROTON</div> <div>BASE: KEY IN BASE OR CONJ. ACID</div> <div>ACID='HCl','H2SO3'</div> <div>BASE='NaOH','Al(OH)3'</div> <div>Acid CHOOSE BOX ACID</div> <div>Base CHOOSE BOX BASE</div> <div>C=1.MOL/L</div> <div>+pKA ACID + pKA</div> <div>pKA=-LOG(RA)</div> <div>+pKB BASE, CONJ. ACID + pKB</div> <div> <div>GRAPH</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>OK</div> </div> </div>	<div> <div>pH=-LOG(RB) pKA+pKB=14</div> <div>ACID + RA</div> <div>RA=c(base)×c(H+)/c(acid)</div> <div>+RB BASE, CONJ. ACID + RB</div> <div>RB=c(OH-)/c(acid)/c(base)</div> <div>+pHA ACID CONC.(MOL/L) + pHA</div> <div>pH-VALUE</div> <div>+pHB BASE (CONJ.ACID)</div> <div>CONC.(MOL/L) + pHB</div> <div>pH-VALUE</div> <div>Exacid EXAMPLE ACIDITR</div> <div>ACID CA.MOL/L</div> <div> <div>GRAPH</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>OK</div> </div> </div>
HelpACIDBASE: help	<div> <div>VA_H1 CB.MOL/L</div> <div>Pacidtit C3 + PLOT ACIDTITRATION</div> <div>FOR STRONG/WEAK ACID</div> <div>Cacidtit C3 VB_H1 + pH</div> <div>CALCULATE pH VALUE</div> <div>Exbase EXAMPLE BASEITR</div> <div>{CONJ.ACID CB VB CA}</div> <div>Pbaseitit C3 + PLOT BASETITRATION</div> <div>FOR STRONG/WEAK BASE</div> <div>Cbaseitit C3 VA_H1 + pH</div> <div>CALCULATE pH VALUE</div> <div>HINT: FOR WEAK ACIDS(pH&lt;9) AND</div> <div> <div>GRAPH</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>OK</div> </div> </div>	<div> <div>HINT: FOR WEAK ACIDS(pH&lt;9) AND</div> <div>WEAK BASES(pH&gt;10) THE HENDERSON-</div> <div>HASSELBALCH EQN IS USED. ACID:</div> <div>pH=pKA+LOG(CB/CA). BASE: (CA/CB)</div> <div>ABreact CHOOSE ACIDBASE REACTION</div> <div>FROM LIST LABR</div> <div>ABeqn MATH EQNS FOR ACID BASE</div> <div>Lpedit EDIT,VIEW LPRAB</div> <div>PRESS [CONT] AFTER EDIT</div> <div>LpKA LIST OF ACIDS WITH pKA</div> <div>LpKB LIST OF BASES WITH pKB</div> <div> <div>GRAPH</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>OK</div> </div> </div>