(23) $\frac{1}{A_t} = Kt + \frac{1}{A_0}$

30 min

$\frac{1}{A_t} = \left[(1.2\times10^{-2})(1800_{sec})\right] + \frac{1}{0.045}$

$\frac{1}{A_t} = 43.8277$

$A_t = 0.023\ M$

(24) $t_{1/2} = \frac{1}{K(A_0)}$

$= \frac{1}{(1\times10^{-2})/(0.3)}$

$= 27.78 sec$

$= 0.463 min$

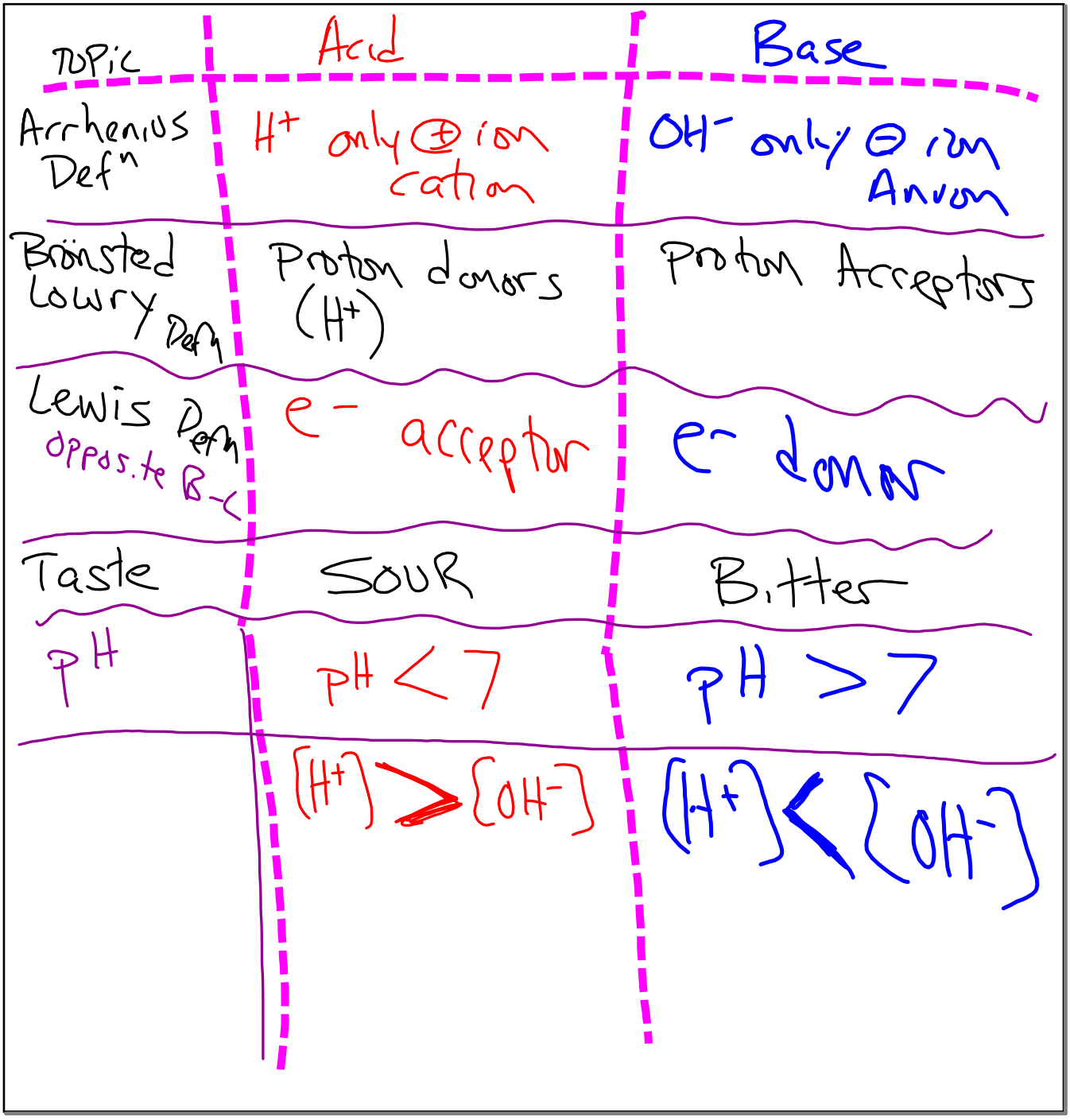
EC $IO_3^- + 5I^- + 6H^+ \rightleftharpoons 3I_2 + 3H_2O$

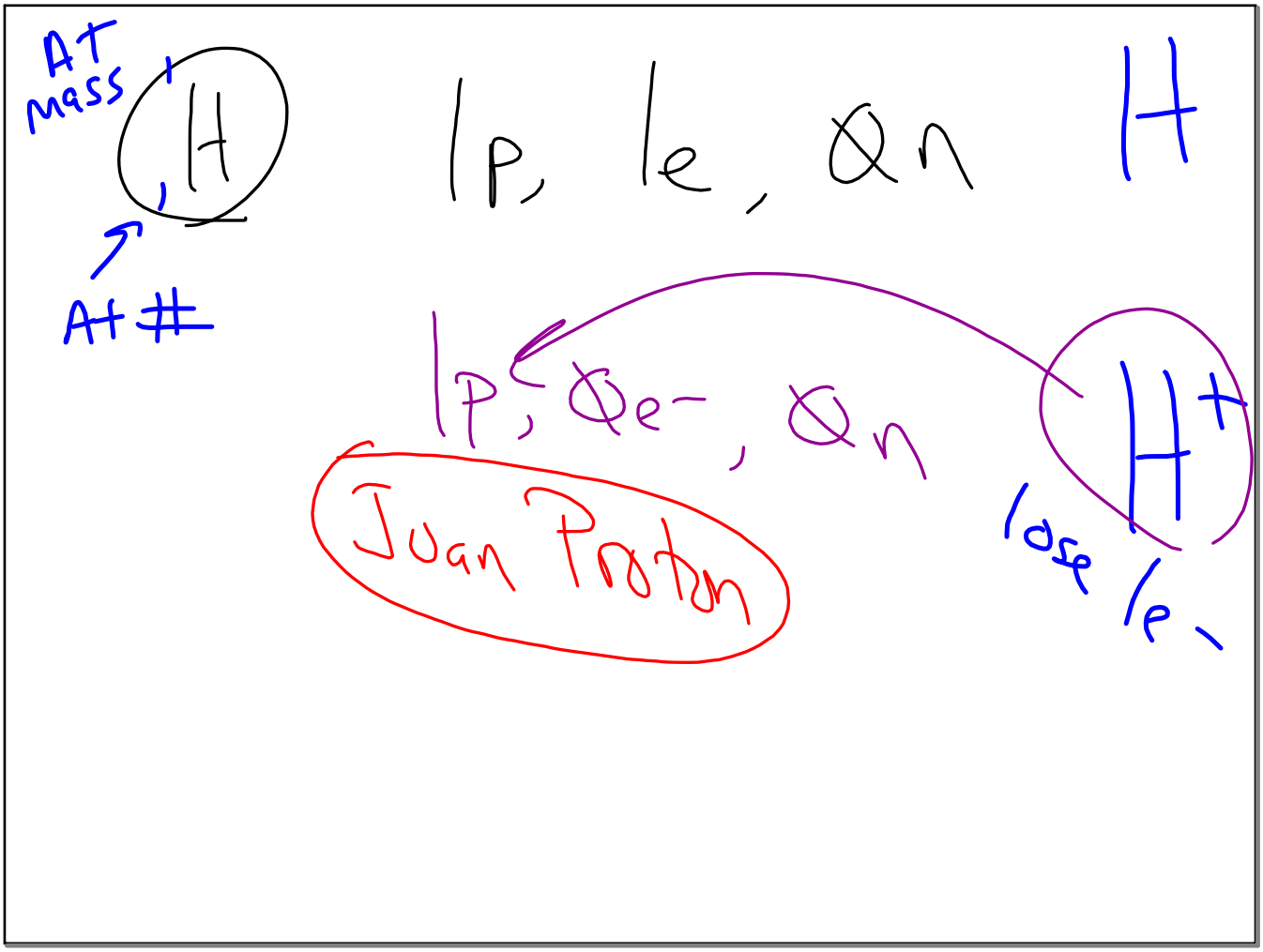
$$-\frac{\Delta[IO_3^-]}{\Delta t} = -\frac{1}{5}\frac{\Delta[I^-]}{\Delta t} = -\frac{1}{6}\frac{\Delta[H^+]}{\Delta t} = +\frac{1}{3}\frac{\Delta[I_2]}{\Delta t} = +\frac{1}{3}\frac{\Delta[H_2O]}{\Delta t}$$

$$-\frac{1}{5}\frac{\Delta[I^-]}{\Delta t} = +\frac{1}{3}\frac{\Delta[I_2]}{\Delta t}$$

$$-\frac{3}{5}\frac{\Delta[I^-]}{\Delta t} = \frac{\Delta[I_2]}{\Delta t}$$

$$\frac{3}{5}(5\times10^{-3}) = 3\times10^{-3}$$


TOPIC
Acid
Base
Arrhenius Defn
H+ only ⊕ ion cation
OH- only ⊖ ion Anion
Brönsted Lowry Defn
Proton donors (H+)
Proton Acceptors
Lewis Defn
opposite B-L
e- acceptor
e- donor
Taste
SOUR
Bitter
pH
pH < 7
pH > 7
[H+] > [OH-]
[H+] < [OH-]



Feb 26-8:04 AM

Strength of an Acid/Base

*** Depends on its degree of dissociation ***

How much it breaks up

SA/SB = Strong ~ 100% dissoc.

WA/WB = Weak < 5% dissoc.

SA HCl, HBr, HI, H_2SO_4, HNO_3, $HClO_3$, $HClO_4$

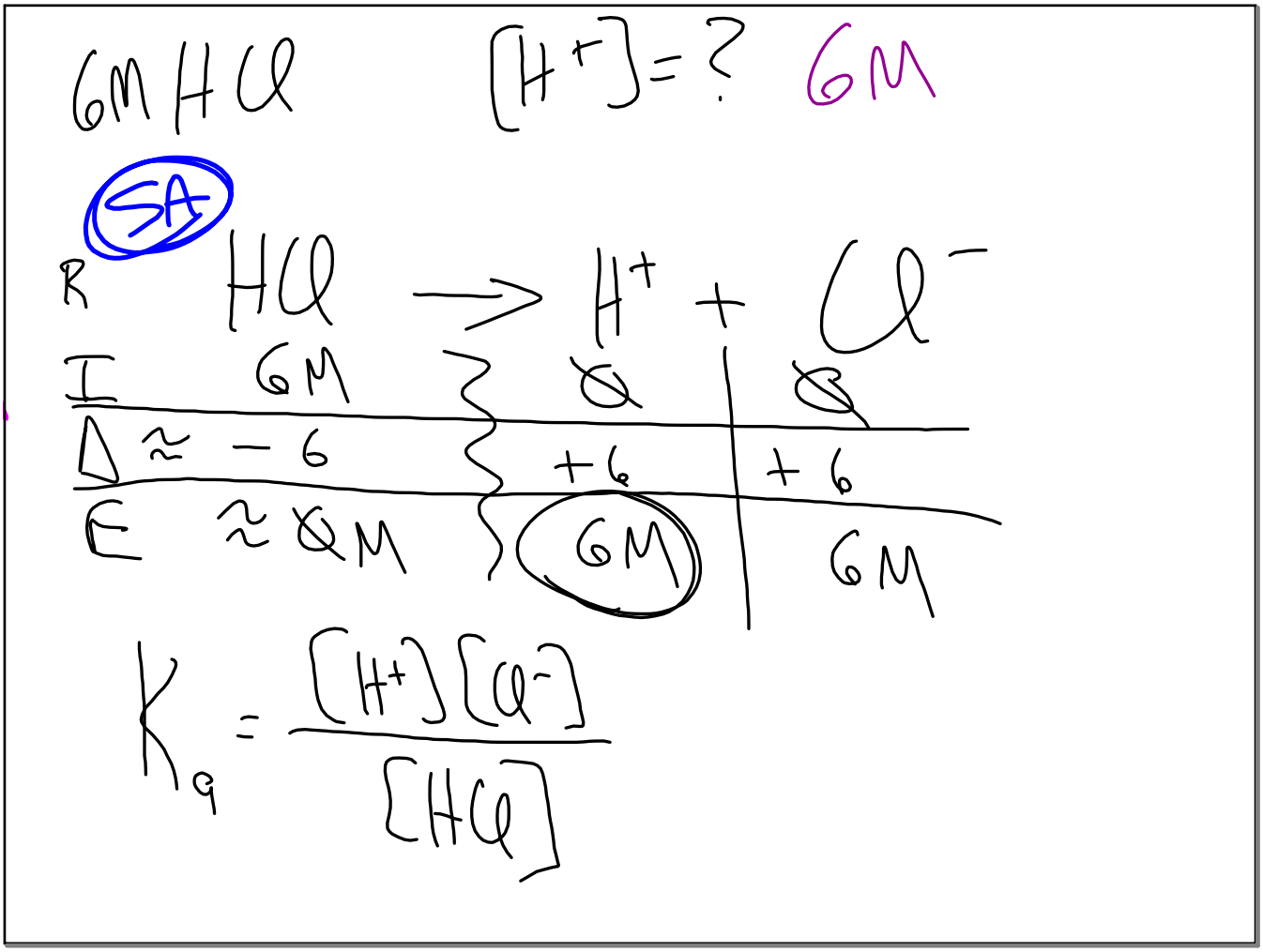
SB $(Gp\ 1)OH$

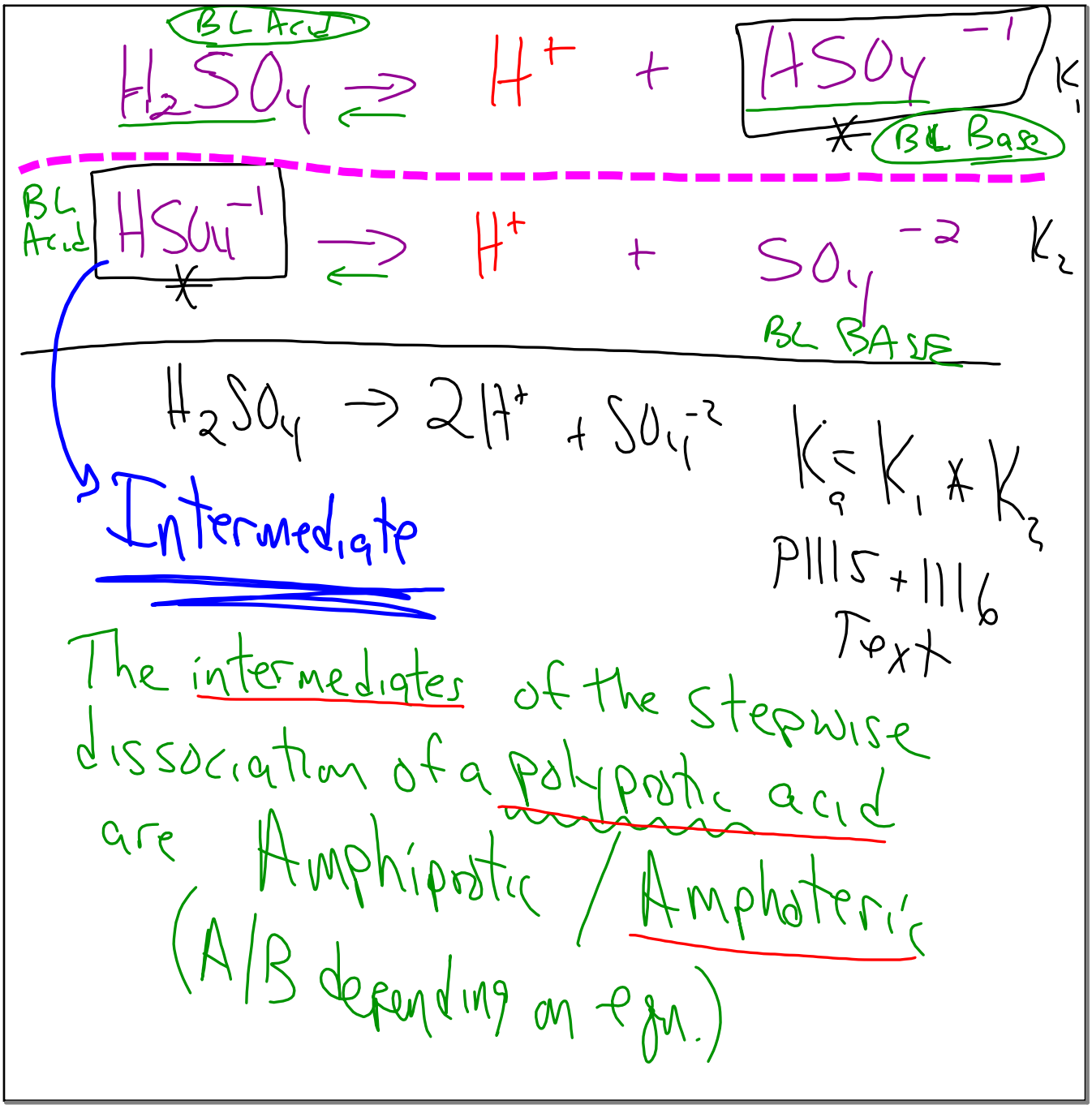
$(Gp\ 2)(OH)_2$

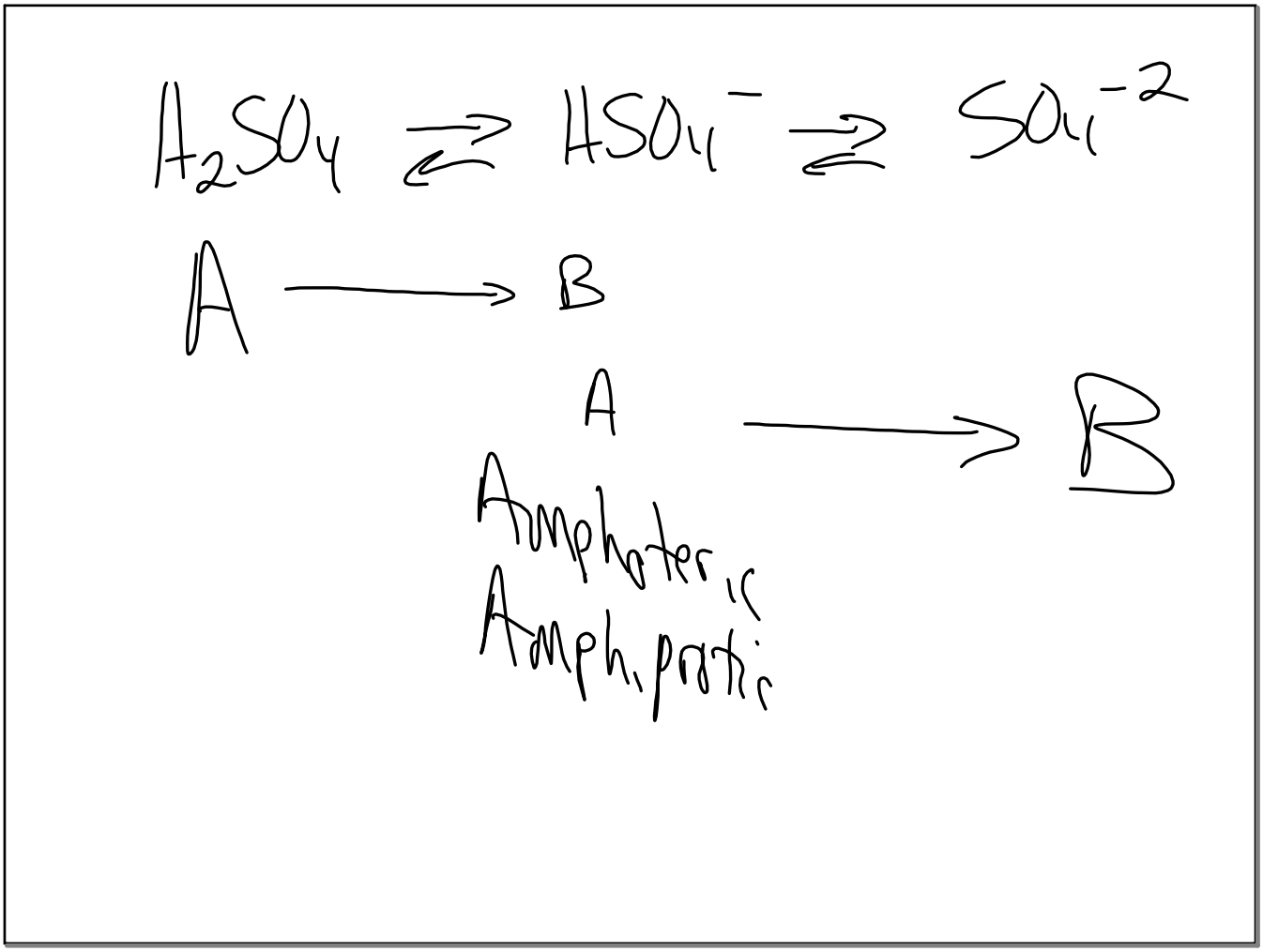
CaS

Ca^{+2}, Ba^{+2}, Sr^{+2}

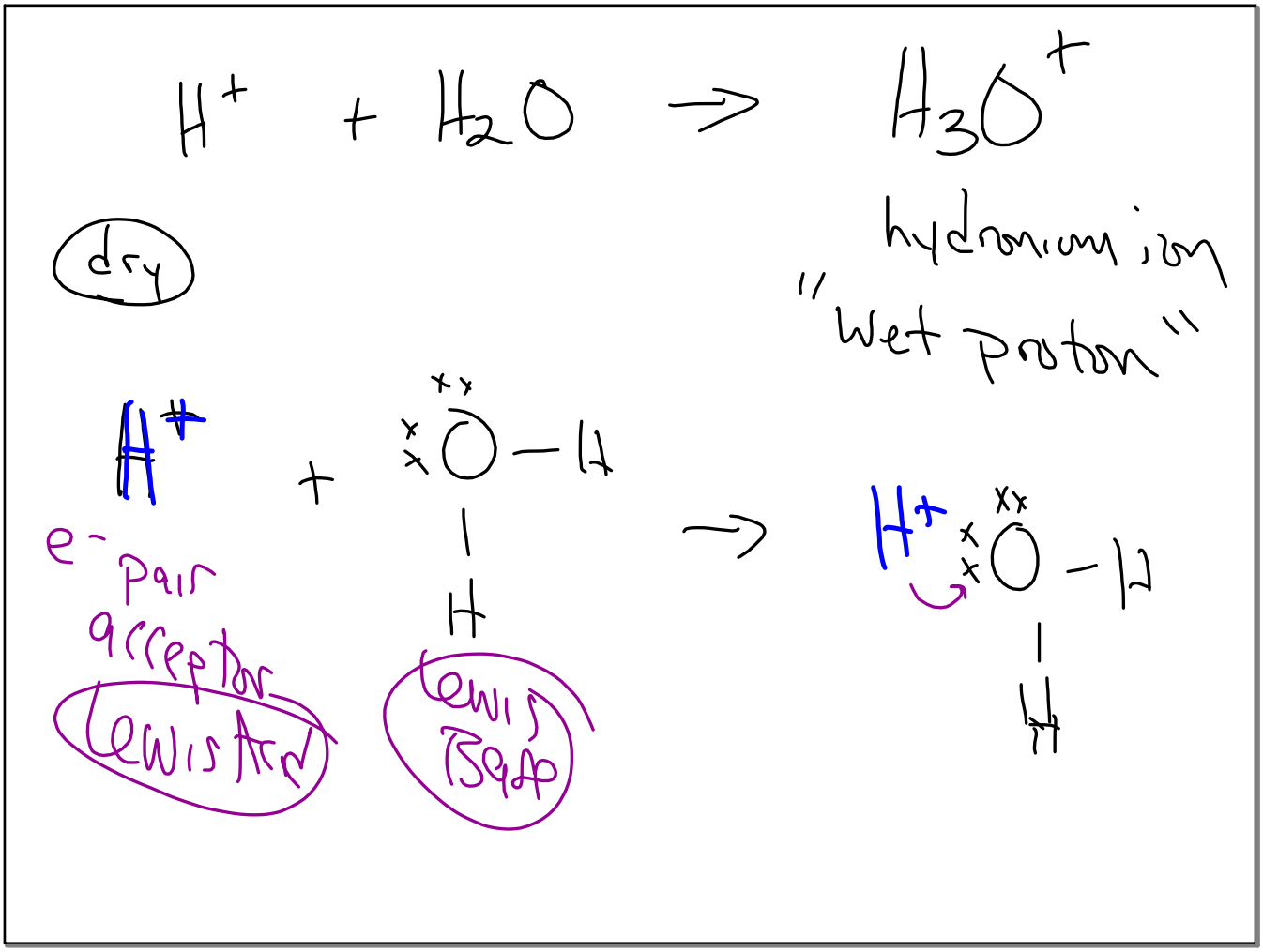
$Ca(OH)_2$


6M HCl
[H+] = ?
6M
SA
R
HCl → H+ + Cl−
I 6M 0 0
Δ ≈ −6 +6 +6
E ≈ 0M 6M 6M
Ka = [H+][Cl−] / [HCl]

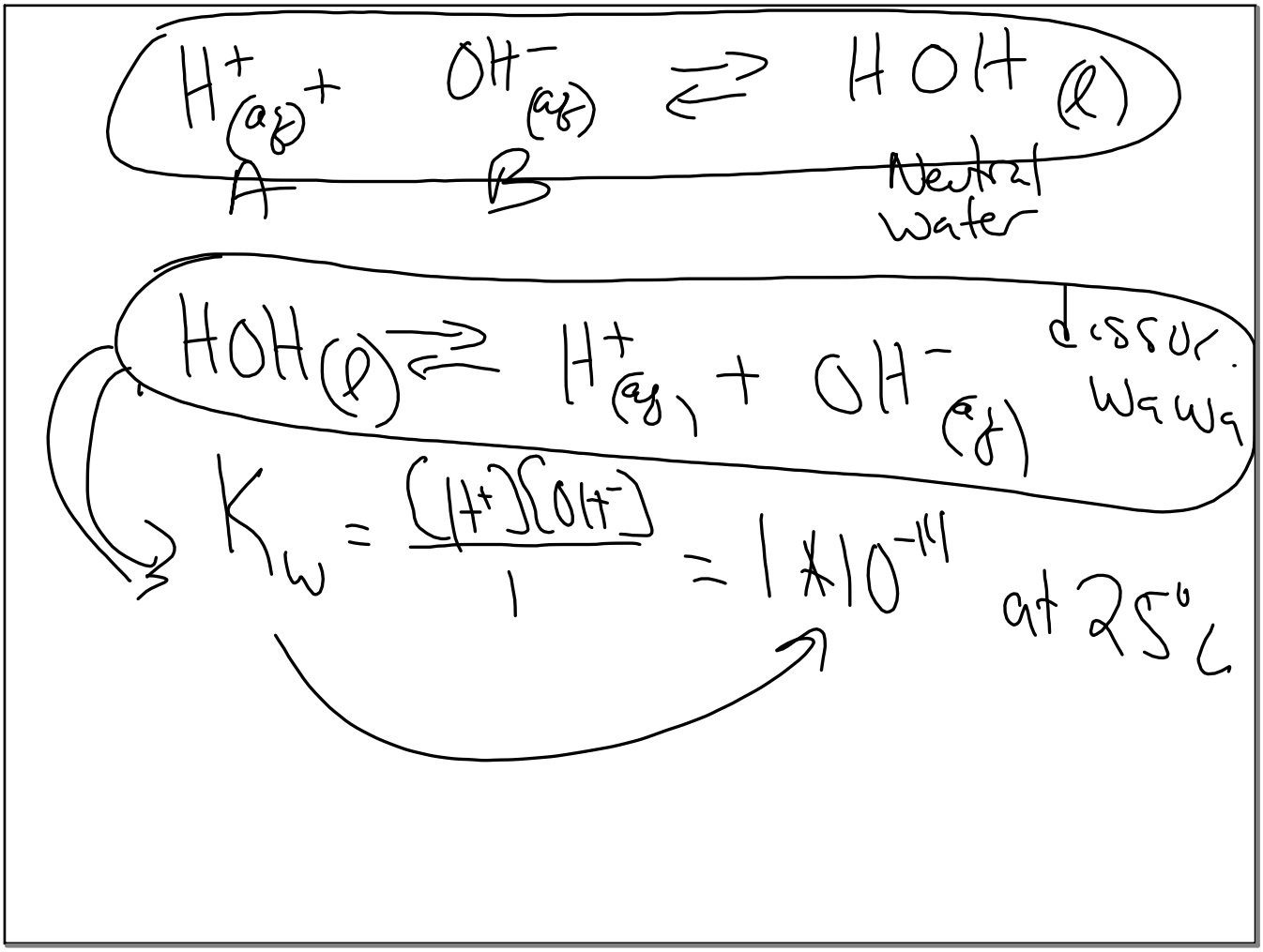

BL Acid
$H_2SO_4 \rightleftharpoons H^+ + HSO_4^{-1}$
K_1
BL Base
BL Acid
$HSO_4^{-1} \rightleftharpoons H^+ + SO_4^{-2}$
K_2
BL BASE
$H_2SO_4 \rightarrow 2H^+ + SO_4^{-2}$
$K_{eq} = K_1 * K_2$
Intermediate
The intermediates of the stepwise dissociation of a polyprotic acid are Amphiprotic / Amphoteric
(A/B depending on eqn.)


$H_2SO_4 \rightleftharpoons HSO_4^- \rightleftharpoons SO_4^{-2}$
A → B
A → B
Amphoteric
Amphiprotic

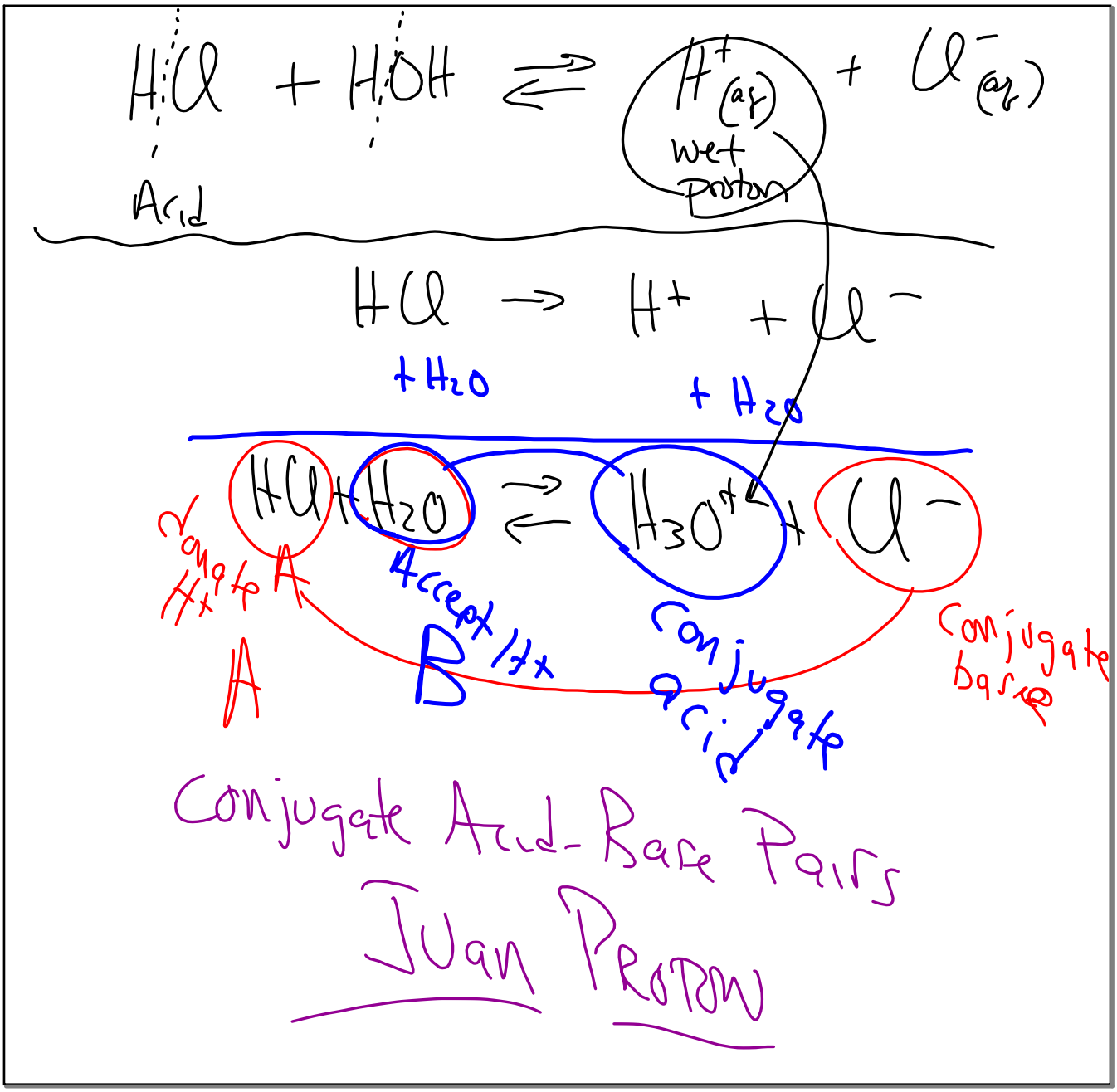
Feb 26-8:52 AM


H+ + H2O → H3O+
dry
hydronium ion
"wet proton"
H+ + O–H
H
e- pair acceptor
Lewis Acid
Lewis Base
H+ O–H
H

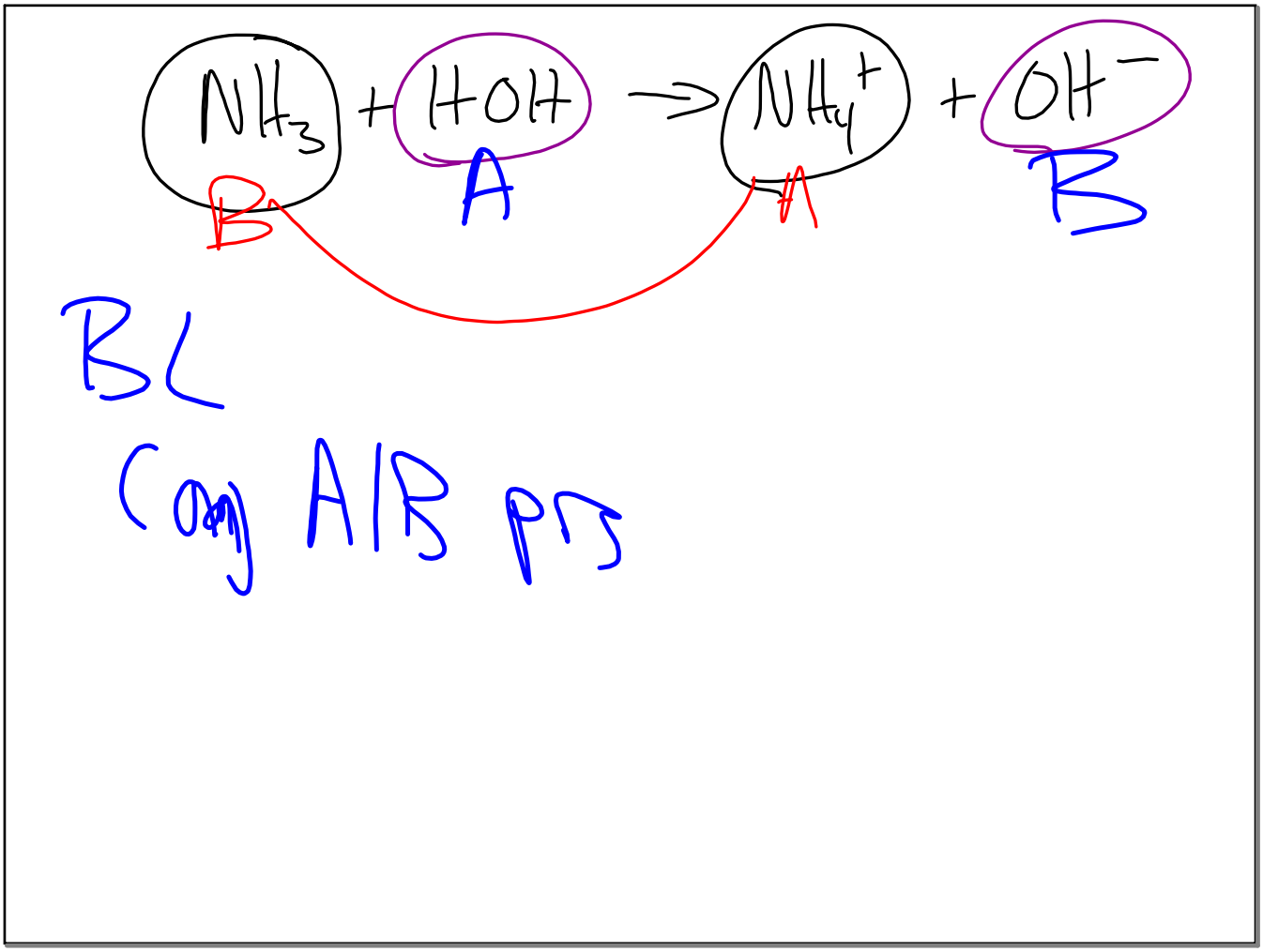
Feb 26-8:54 AM


$H^+_{(aq)}$ + $OH^-_{(aq)}$ ⇌ $HOH_{(l)}$
A
B
Neutral water
$HOH_{(l)}$ ⇌ $H^+_{(aq)}$ + $OH^-_{(aq)}$
dissoc. w/ w
$K_w = \frac{[H^+][OH^-]}{1} = 1 * 10^{-14}$ at 25°C

Feb 26-9:01 AM


Acid
wet proton
+ H2O
+ H2O
Conjugate Acid-Base Pairs
Juan Proton

Feb 26-9:05 AM



Feb 26-9:13 AM

16/ 20, 22, 32

Feb 26-9:16 AM