$$-\Delta H = E_A \sigma_B + C_A C_B$$

ion	I	A	χ	η
Al^{3+}	119.99	28.45	74.22	45
K^+	31.6	4.34	18	13.6
Zn^{2+}	39.7	18	28.4	10.8
F^-	17.42	3.4	10.4	7
CN^-	14	3.8	8.9	5.1
I^-	10.45	3	5.76	3.7

acids	C_A	ϵ_A
I_2	1. ∞	1. ∞
BF_3	1.6	9.88
BMe_3	1.7	6.14

Bases	C_B	ϵ_B
$(Et_3)NO$	11.09	0.991
H_3NO	3.46	1.36

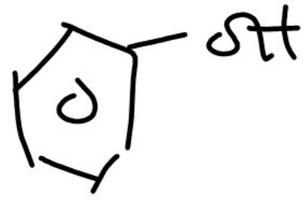
$I_2 + C_6H_6 \rightarrow (I-)-(C_6H_6)$

acid base

$-\Delta H = E_A E_B + C_A C_B$

$= 1 \times 0.525 + 1 \times 0.681 =$

$\Delta H = -(1.206)\ \frac{kCal}{mol} = (1.20 \times 4.18)\ \frac{kJ}{mol}$

acids	C_A	C_B
~~CH_3Cl~~		
$CHCl_3$	0.154	3.0 ~
	0.442	4.33
$B(Me)_3$	1.70	6.14

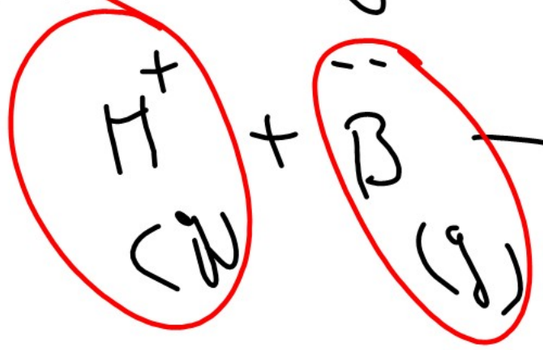
Acid & Base Strength

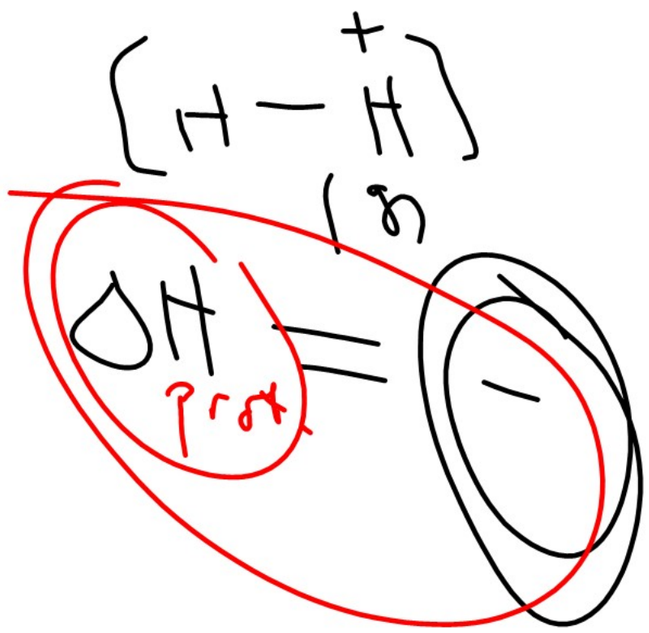
→ M.P & B.P

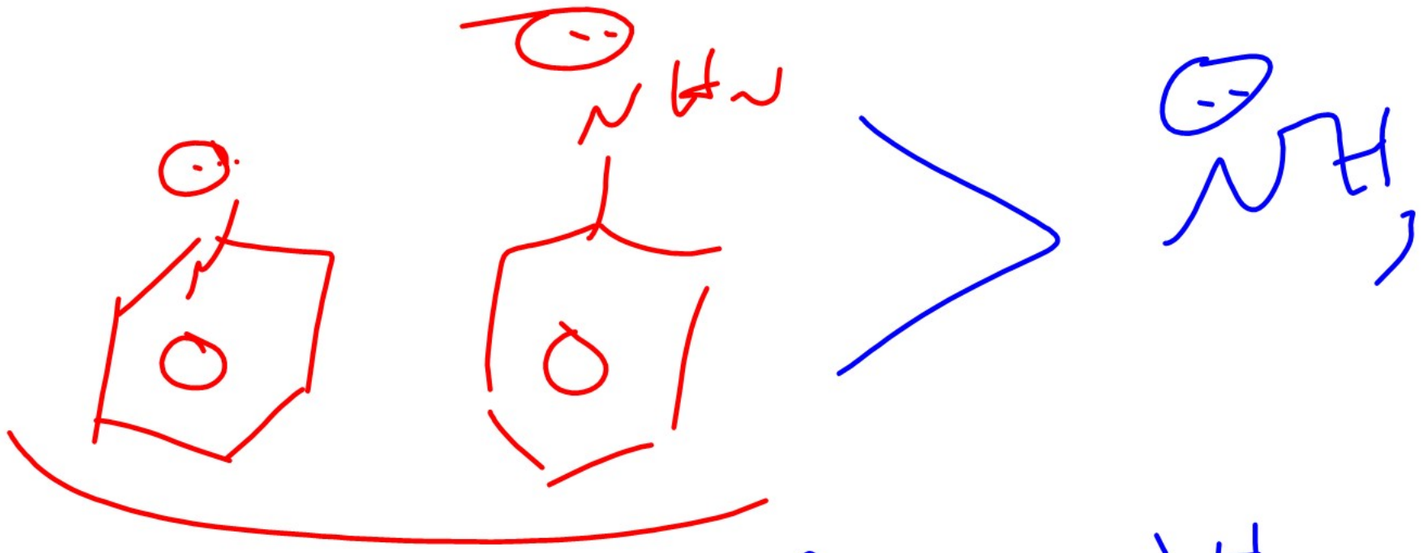
→ pH & calorimetry

→ pH pKa

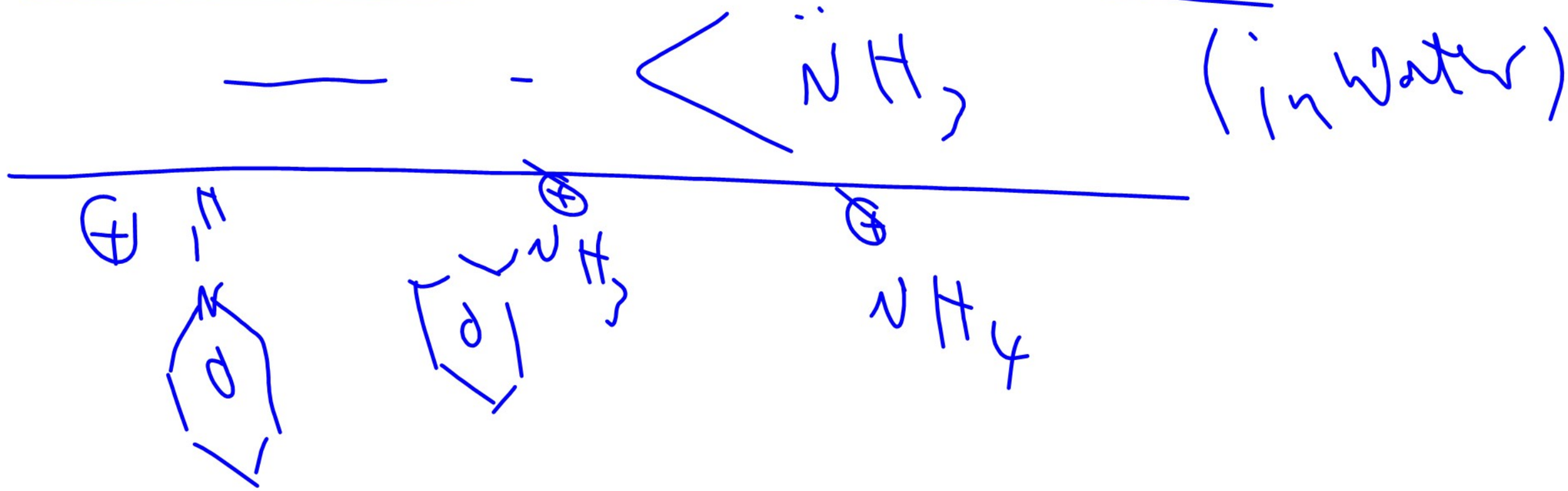
Proton affinity







Stronger Base than NH_3 {gas phase}



HX

HF

HI (g)

H — Cl (g)

H — Cl (l)

$HClO_3$

H — F

H — Cl

H — Br

H — I

H — O

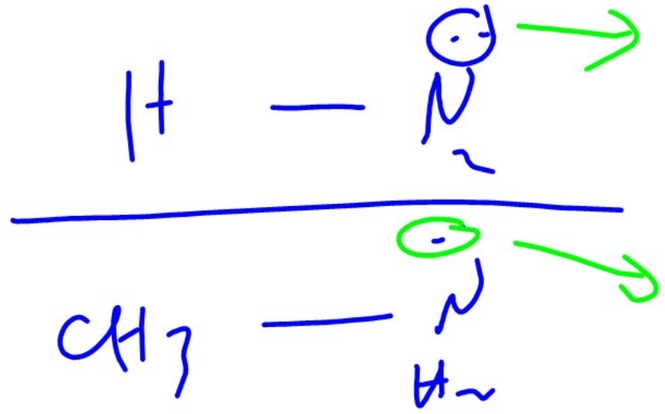
H — S

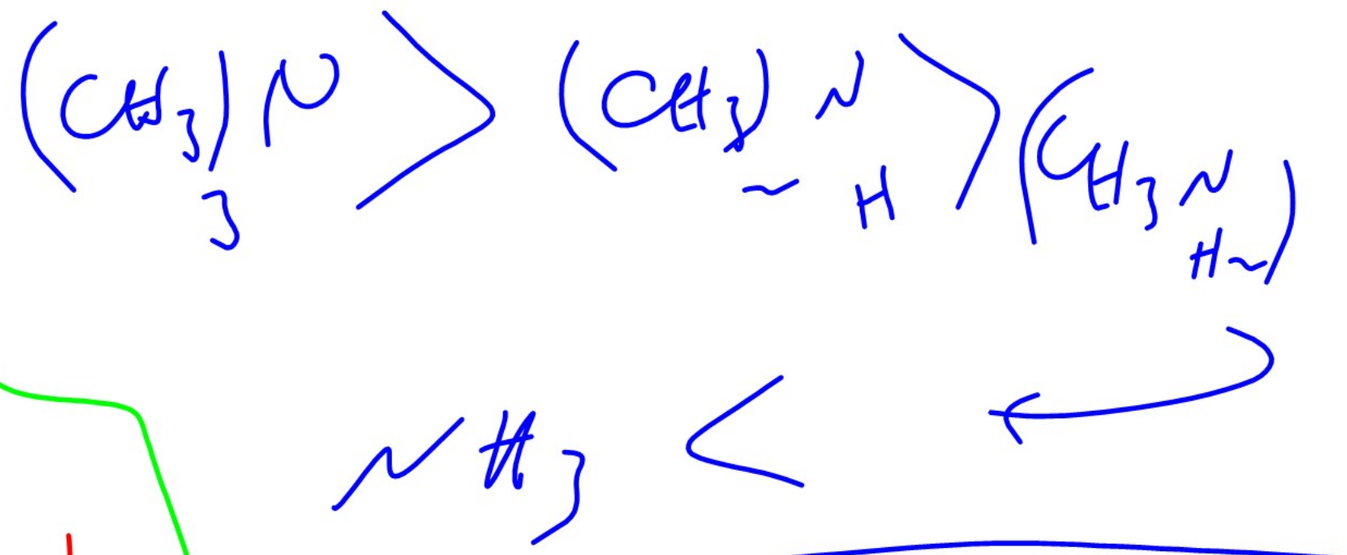
H — Se

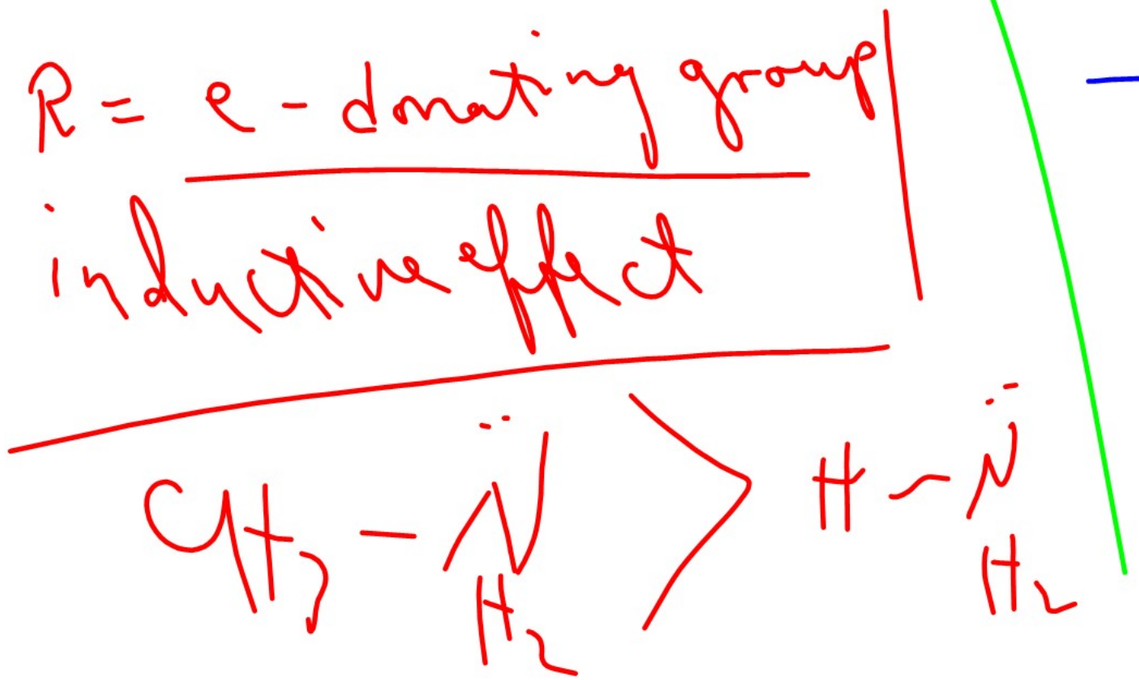
H — Te

H_3N

H_3P







$(CH_3)_3N > (CH_3)_2NH > NH_3$

$F_3N < Cl_3N < Br_3N$

$BI_3 < BBr_3 < BCl_3 < BF_3$ based on rigidity ind. eff.

$BBr_3 > BCl_3 > BF_3$ acidity

exp.