

Clase 10 22 abril 2022

Título de la nota

22/04/2022



Lewis



ácido

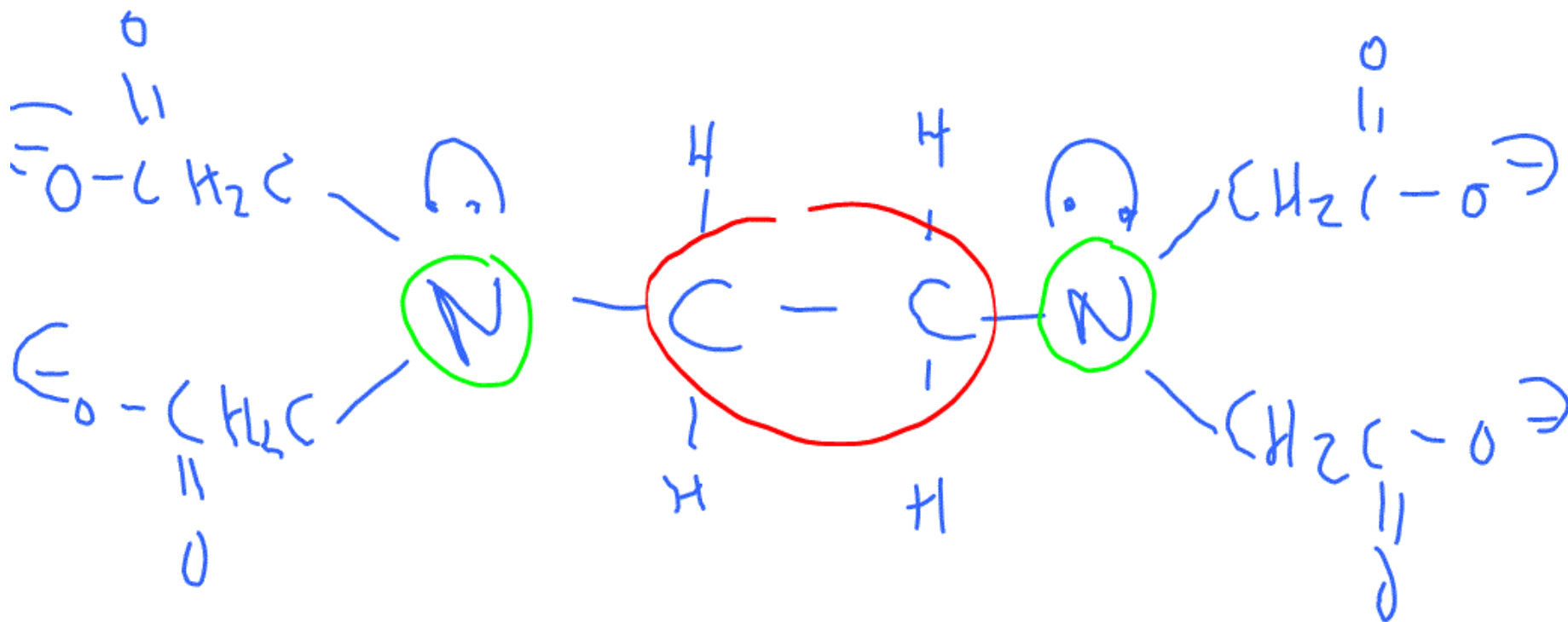


base



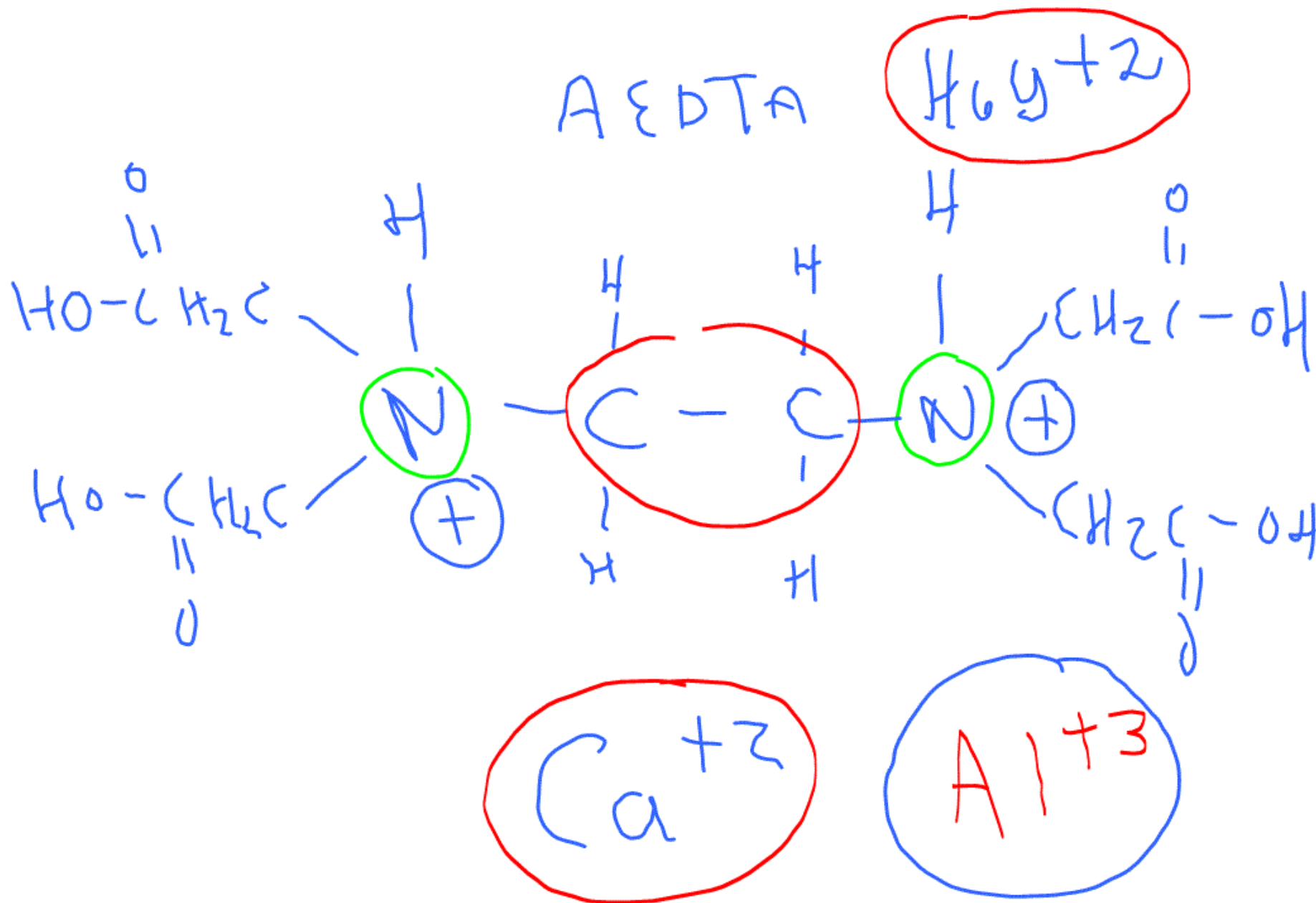
AEDTA

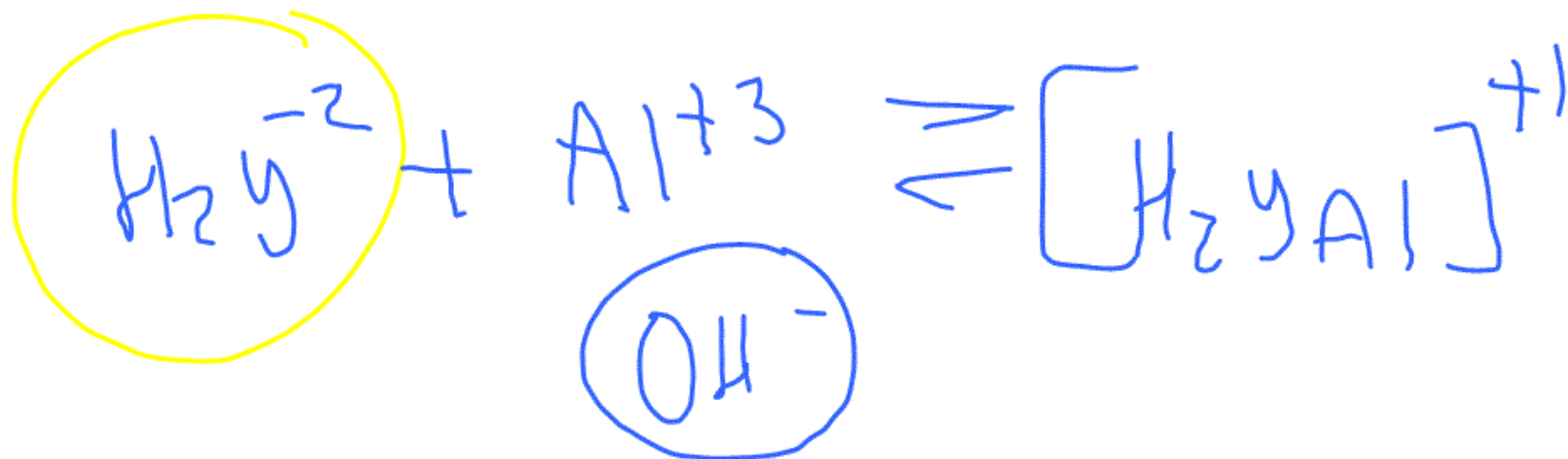
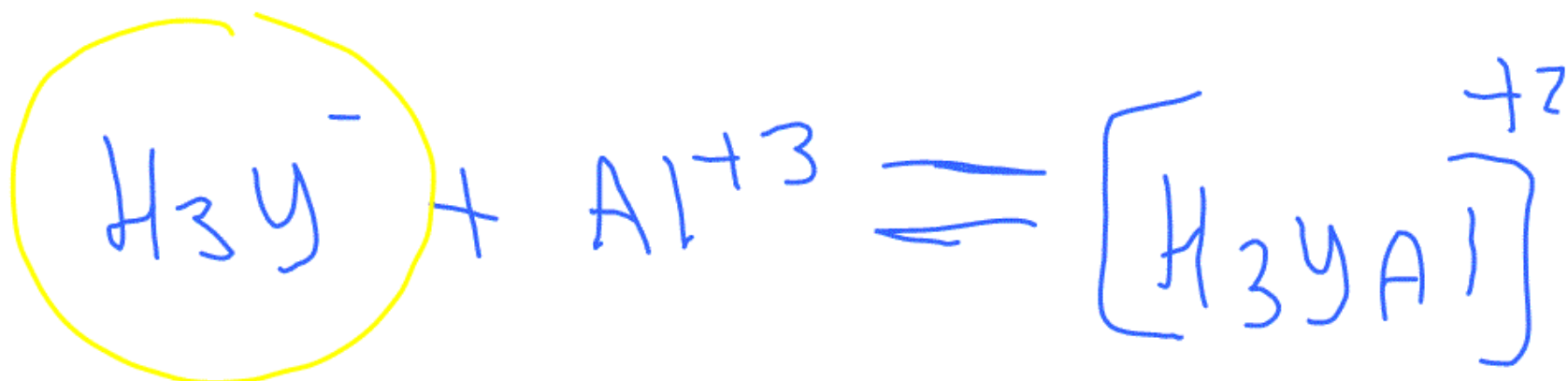
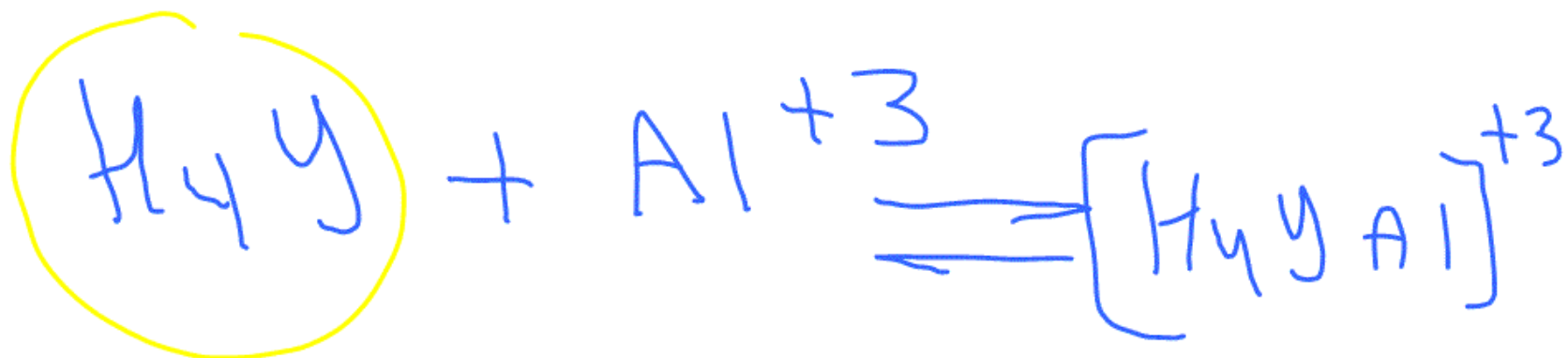
H6Y

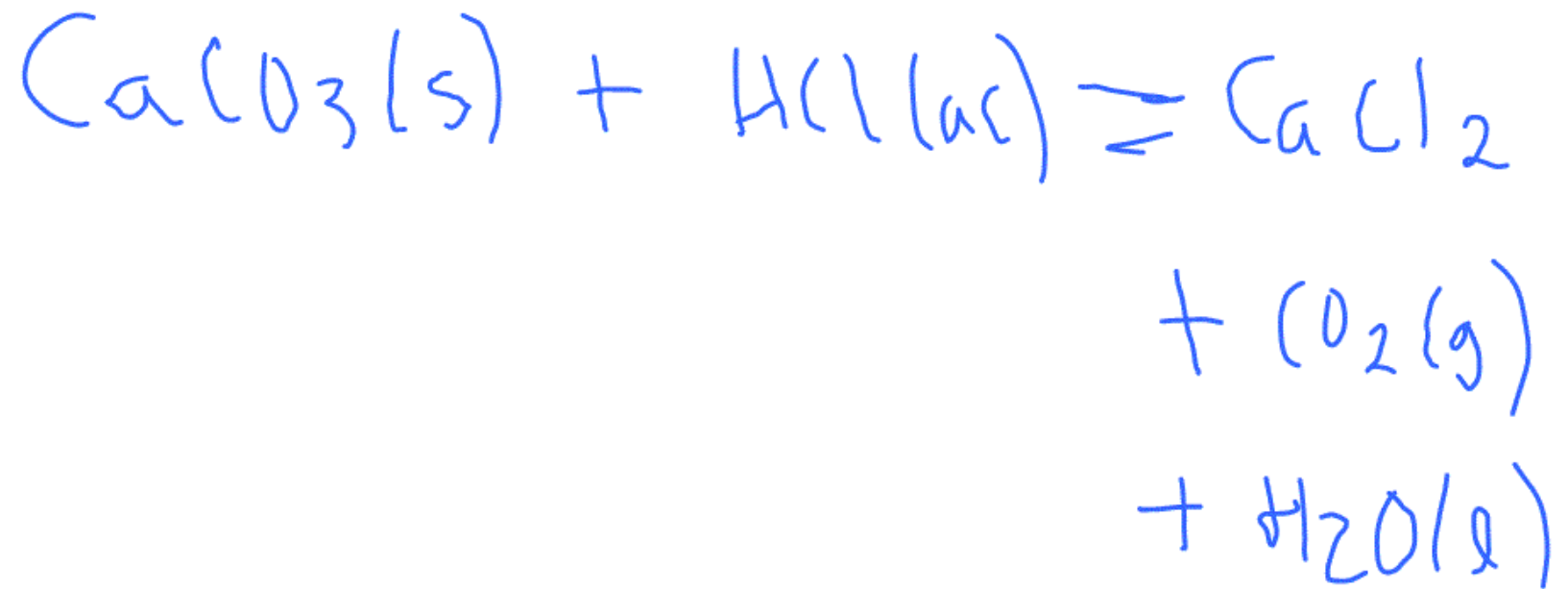


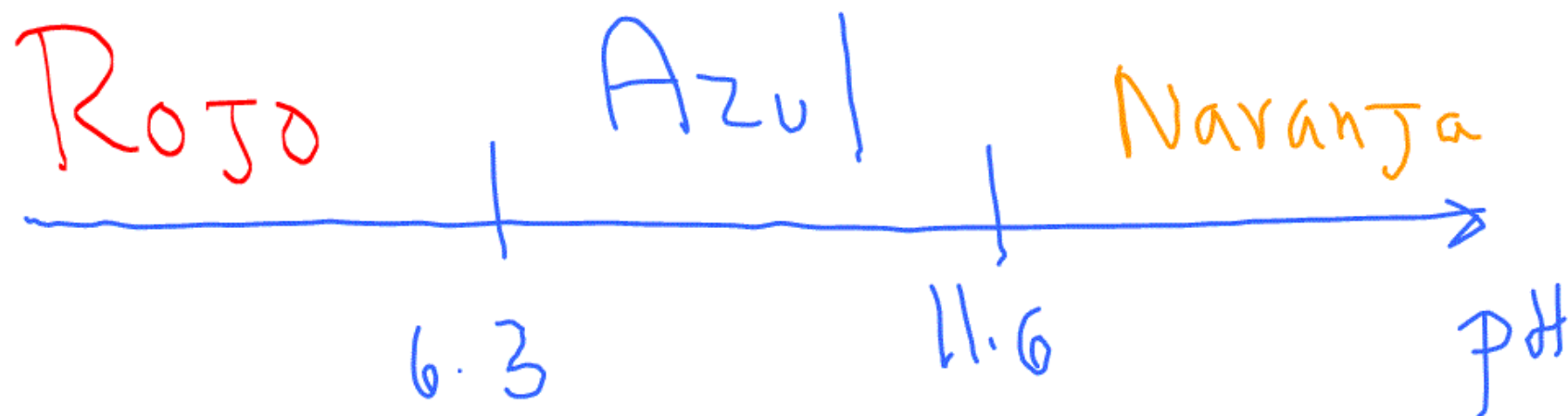
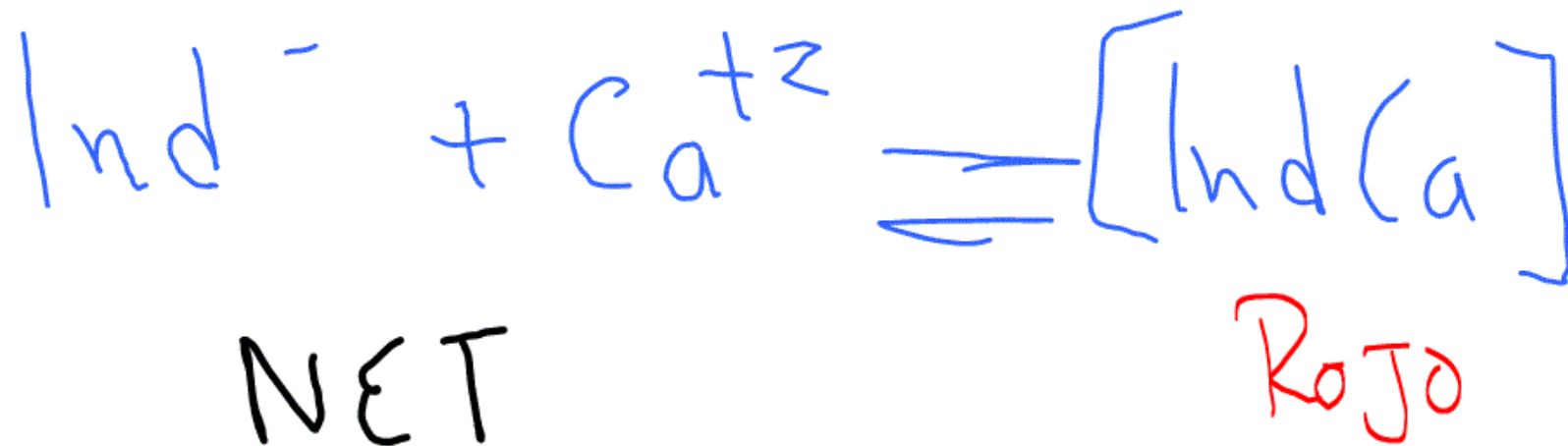
Ca⁺²

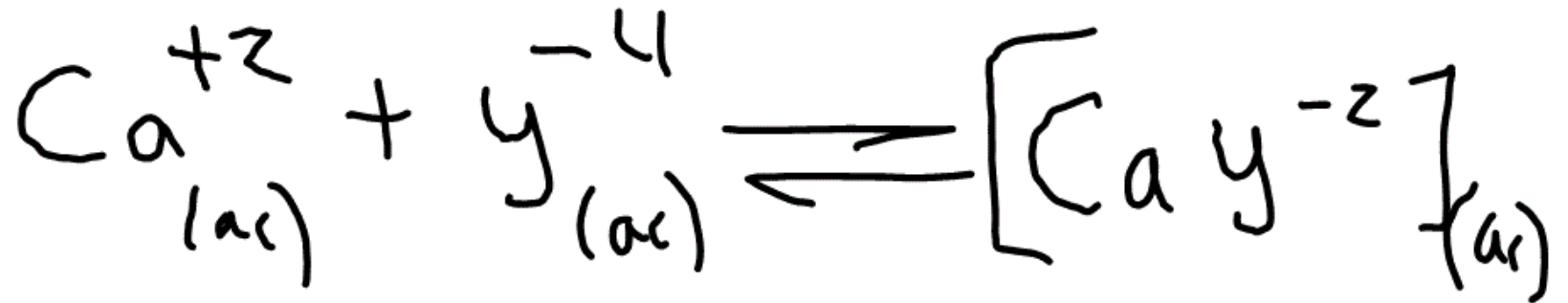
H₃O⁺









$$K_F$$


$$\alpha_{(a|OH)}$$

$$\alpha_{y^{-4}(H_3O^+)}$$

$$\alpha_{Ca(OH)} = \frac{[Ca']}{[Ca_L]}$$

$$[Ca_L] = \frac{[Ca']}{\alpha_{Ca(OH)}}$$

$$\alpha_{Ca(OH)} = 1 + \beta F [OH^-]$$

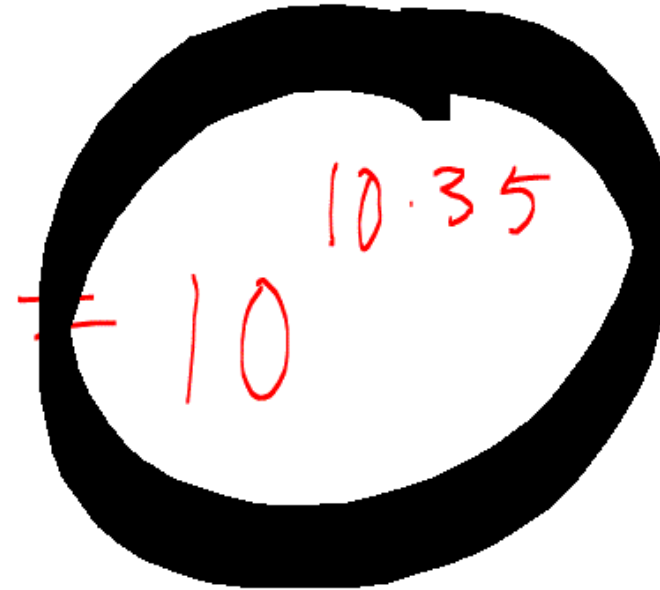
$$\alpha(\text{Ca(OH)}) = 1 + 10^{1.3} [\text{OH}^-]$$

$$\begin{aligned} \alpha_{\text{Y}^{-4}}(\text{H}_3\text{O}^+) &= 1 + \beta_{p1} [\text{H}_3\text{O}^+] + \beta_{p2} [\text{H}_3\text{O}^+]^2 \\ &\quad + \beta_{p3} [\text{H}_3\text{O}^+]^3 + \beta_{p4} [\text{H}_3\text{O}^+]^4 \\ &\quad + \beta_{p5} [\text{H}_3\text{O}^+]^5 + \beta_{p6} [\text{H}_3\text{O}^+]^6 \end{aligned}$$



$$\frac{1}{K_{ap}}$$

$$= \frac{1}{10 - 10.35}$$



$$\beta_{p2} = \frac{1}{\text{Kagkas}}$$

$$= \frac{1}{\frac{-10.35}{10} - \frac{6.25}{10}} = 10^{6.60}$$

$$\beta_{p3} = \frac{1}{K_{a5} K_{a5} K_{a4}}$$

$$\beta_{p4} = \frac{1}{K_{a6} K_{a5} K_{a4} K_{a3}}$$

$$\beta_{p5} = \frac{1}{K_{a6} K_{a5} K_{a4} K_{a3} K_{a2}}$$

$$Ca^{+2} + y^{-4} \rightleftharpoons [Ca y^{-2}]$$

$$K_F = \frac{[Ca y^{-2}]}{[Ca^{+2}] [y^{-4}]}$$

$$= 10^{10.7}$$

$$Ca^{+2'} + y^{-4'} = [Ca y^{-2}]$$

$$KF' = \frac{[Ca y^{-2}]}{[Ca^{+2'}][y^{-4}]}$$

$$K_F' = \frac{[Ca^{+2}][Y^{-4}]}{[CaY^{-2}]}$$

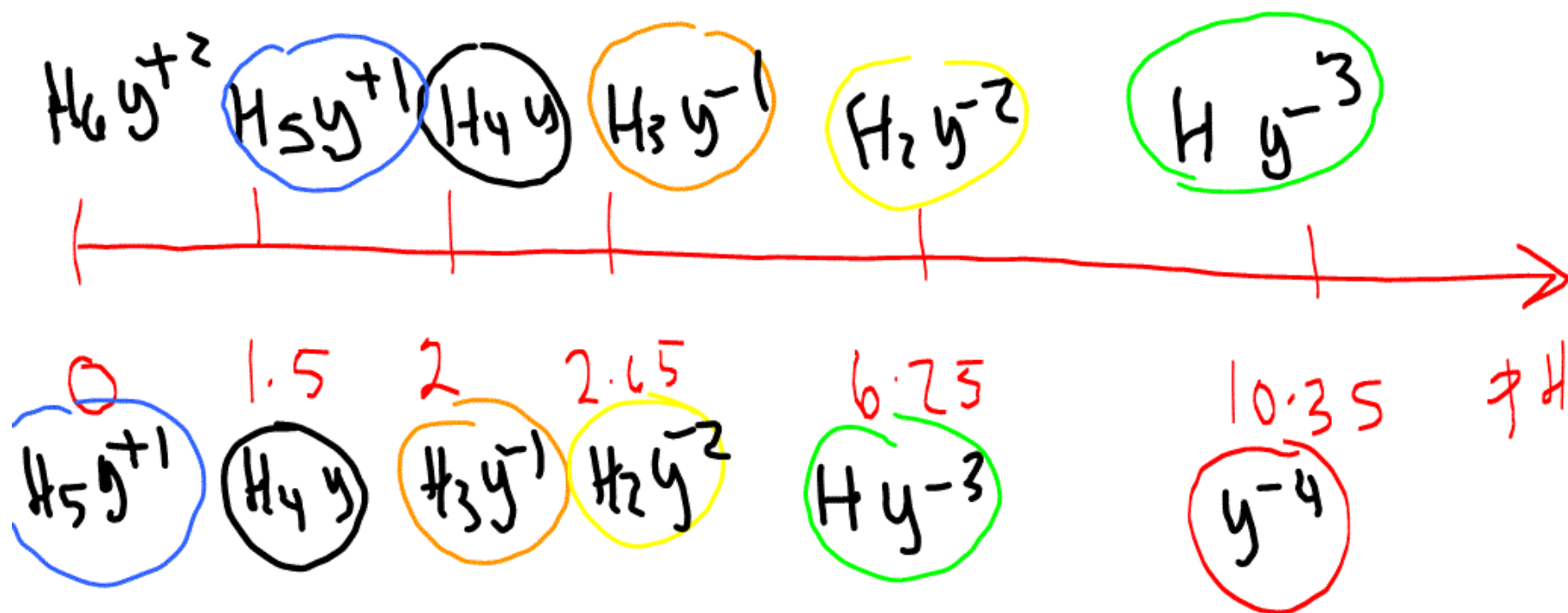
$$\alpha_{(Ca^{+2})} = \frac{[Ca^{+2}]}{[Ca^{+2}]_L}$$

$$[Ca^{+2}] = \alpha_{(Ca^{+2})} [Ca^{+2}]_L$$

$$K_F' = \frac{[Ca^{2+}]^2}{\alpha_{Ca(OH)} [Ca^{2+}] \alpha_{Y^{-4}} (430^+) [Y^{4-}]}$$

$$K_F' = \frac{K_F}{\alpha_{Ca(OH)} \alpha_{Y^{-4}} (430^+)}$$

Ligante	pK ₁	pK ₂	pK ₃	pK ₄	pK ₅	pK ₆
AEDTA	0.00	1.50	2.00	2.65	6.25	10.35



$\text{pH} = 0$ nula

$$K_{F'} = \frac{K_F}{\alpha(\text{cation}) \alpha \gamma^{-4}(\mu_{30+})}$$

$\alpha(\text{cation}) \alpha \gamma^{-4}(\mu_{30+})$

$$K_{F'} = \frac{10^{10.7}}{1 \cdot 10^{23}} = 10^{-12.3}$$

pH de inicio de precipitación

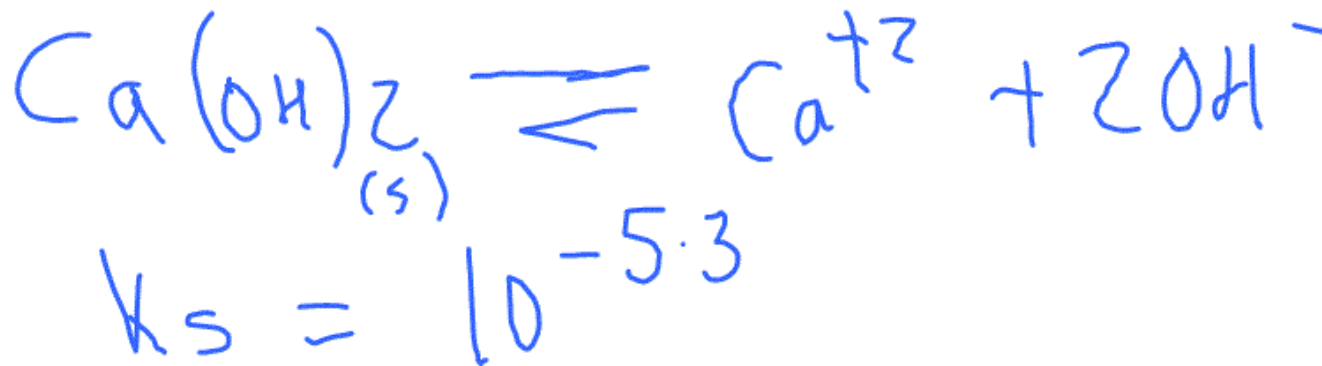
	pKs
Ca(OH) ₂	5.30



pH	12.35
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Ks =	[Ca ⁺²]	[OH ⁻] ²	=	5.0119e-6		
[OH ⁻] ²	=	Ks	=	5.0119e-6		
		[Ca ⁺²]	=	0.01	=	5.0119e-4

[OH ⁻]	=	0.0224
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$$K_F = 10^{5.3}$$

$$\begin{aligned} \text{pH} &= 14 + \log C_B \\ &= 14 + \log 0.0224 = 12.35 \end{aligned}$$

$$K_F' (a \ln d) = \frac{K_F (a \ln d)}{\alpha (a \ln r) \alpha \ln d (H_{30}^+)}$$