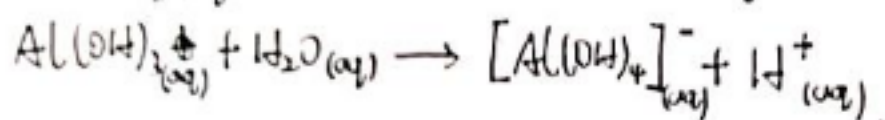
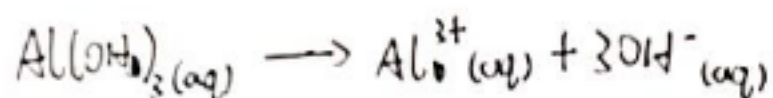


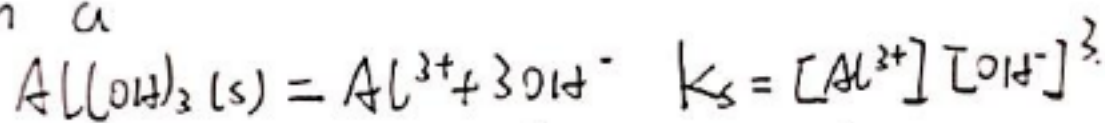
1. Traitement de la bauxite

(1): L'espace amphotère ou acido-basique est une espèce chimique pouvant se comporter à la fois comme un acide et une base.



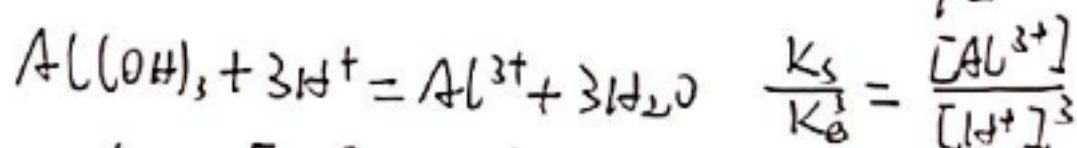
2. ☒ 1. Al^{3+} 2. $\text{Al}(\text{OH})_3$ 3. $[\text{Al}(\text{OH})_4]^{-}$
4. Al .

3. On a



$$K_e = 10^{-14} = [\text{H}^{+}][\text{OH}^{-}]$$

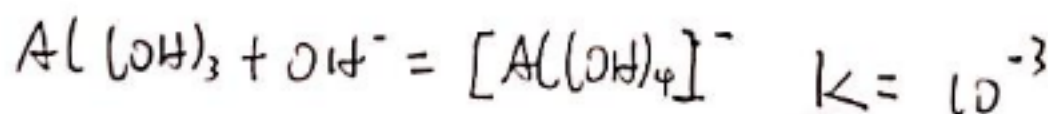
À point A. $\text{pH} = 4 \Rightarrow [\text{H}^{+}] = 10^{-4} \text{ mol/L}$.

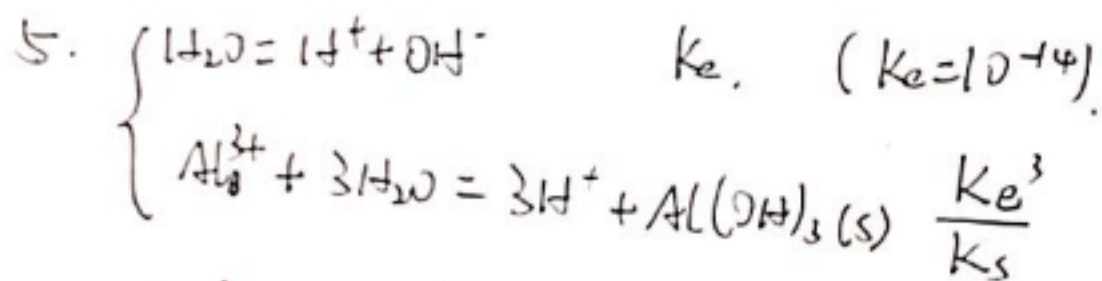


$$\text{et } [\text{OH}^{-}] = 10^{-10}$$

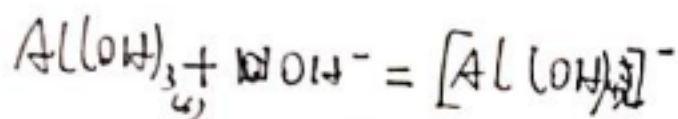
$$\text{Donc on a } [\text{Al}^{3+}] = 10^{-2} \text{ mol/L} \quad K_s = 10^{-32}$$

4. C'est même avec.





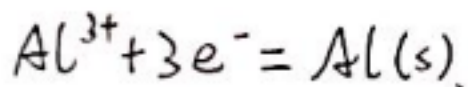
$$\Rightarrow K_s = 10^{-32}$$



$$K = K_s \beta(4) = 10^2$$

$$\Rightarrow K = \frac{[Al(OH)_4]^-}{[OH^-]} \Rightarrow [OH^-] = 10^{-4} \Rightarrow pH = 10$$

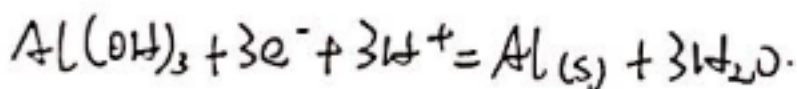
6. pour 1/4.



$$E = E^0(Al^{3+}/Al) + \frac{0.06}{3} \log [Al^{3+}] \quad \text{pas de pH}$$

C'est pente nulle.

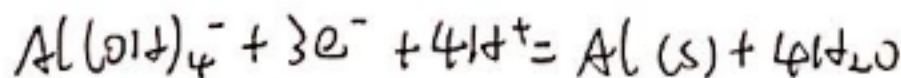
pour 2/4.



$$E = E^0(Al(OH)_3/Al) + \frac{0.06}{3} \log ([H^+]^3) = E^0 - 0.06 pH$$

$$\text{pente} = -0.06$$

pour 3/4.

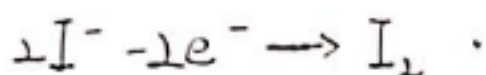
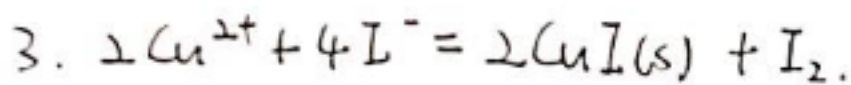
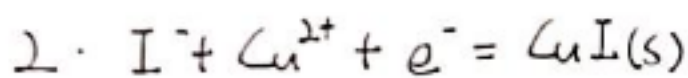


$$E = E^0(Al(OH)_4^-/Al) + \frac{0.06}{4} \log \left(\frac{[H^+]^4}{[Al(OH)_4^-]} \right) = E^0 - 0.08 pH$$

$$\text{pente} = -0.08$$

2.1.

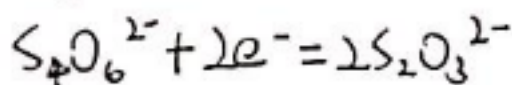
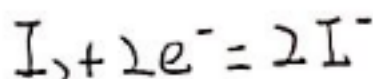
1. Non. Si il y a trop, il y aura des précipitations.



$$4. E^0(Cu^{2+}/CuI) + 0.06 \log([Cu^{2+}][I^-]) = E^0(I_2/I^-) + \frac{0.06}{2} \log\left(\frac{1}{[I^-]^2}\right)$$

$$0.27 = 0.06 \log\left(\frac{1}{[Cu^{2+}][I^-]^2}\right)$$

5. Non. Les deux demi-équations électroniques sont



$$E(I_2/I^-) = E^0(I_2/I^-) + \frac{0.06}{2} \log\left(\frac{[I_2]}{[I^-]^2}\right)$$

$$E(S_4O_6^{2-}/S_2O_3^{2-}) = E^0(S_4O_6^{2-}/S_2O_3^{2-}) + \frac{0.06}{2} \log\left(\frac{[S_4O_6^{2-}]}{[S_2O_3^{2-}]^2}\right)$$

$$K^0 = \frac{[S_4O_6^{2-}][I^-]^2}{[S_2O_3^{2-}]^2[I_2]}$$

Pour l'équilibre.

$$E^0(I_2/I^-) + \frac{0.06}{2} \log\left(\frac{[I_2]}{[I^-]^2}\right) = E^0(S_4O_6^{2-}/S_2O_3^{2-})$$

$$\text{Donc on a } \dots + \frac{0.06}{2} \log\left(\frac{[S_4O_6^{2-}]}{[S_2O_3^{2-}]^2}\right)$$

$$0.54 = 0.03 \log(K^0)$$

$$K^0 = 10^{18} \gg 1$$

C'est bien étale.