

Ejercicio 12 Baia.

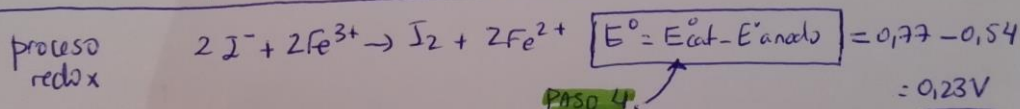
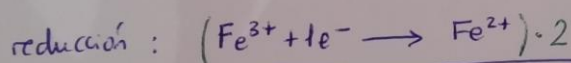
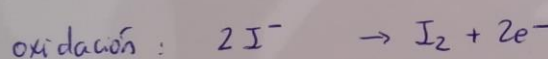
a) ¿ $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$, $\text{I}^- \rightarrow \text{I}_2$?

PASO 1. Buscar los potenciales redox en la tabla

$$E^\circ(\text{Fe}^{3+}/\text{Fe}^{2+}) = +0,77\text{V}$$

$$E^\circ(\text{I}_2/\text{I}^-) = +0,54\text{V}$$

PASO 2. Escribir las semirreacciones



PASO 3. Escribir los potenciales al lado de cada semirreacción

$$E^\circ_{\text{ánodo}} = 0,54\text{V}$$

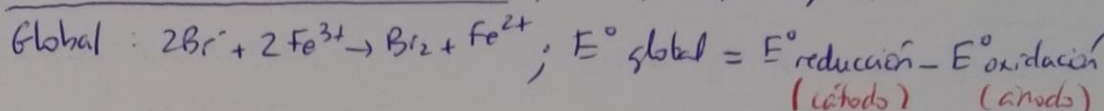
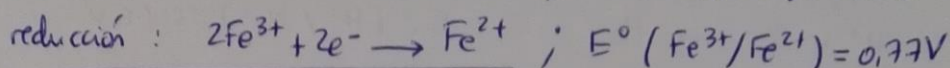
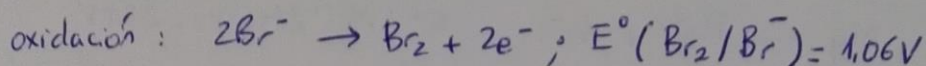
$$E^\circ_{\text{cátodo}} = 0,77\text{V}$$

$$E^\circ = E^\circ_{\text{cátodo}} - E^\circ_{\text{ánodo}} = 0,77 - 0,54 = 0,23\text{V}$$

PASO 4. Razonar si es espontáneo o no

Como $E > 0$, ΔG será < 0 ($\Delta G = -nFE$)
por lo que el proceso es espontáneo

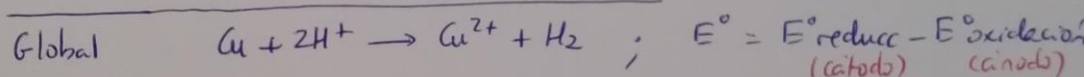
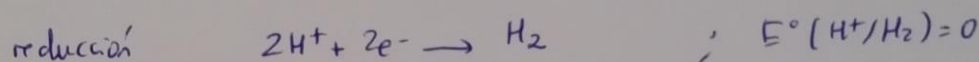
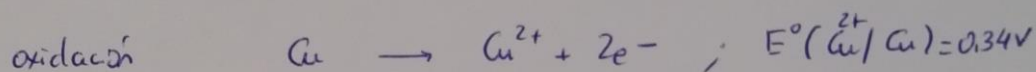
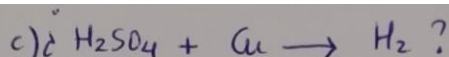
b) ¿ $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$, $\text{Br}^- \rightarrow \text{Br}_2$?



$$E^\circ = 0,77 - 1,06 < 0$$

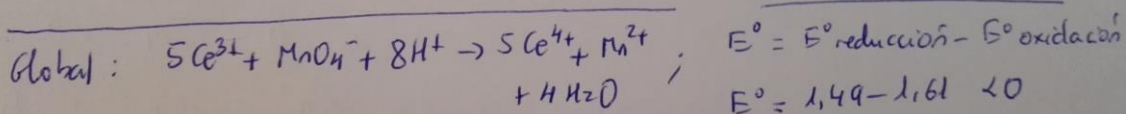
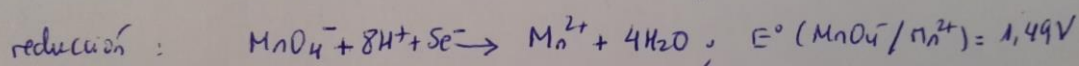
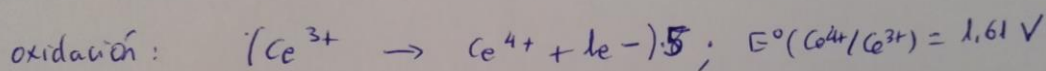
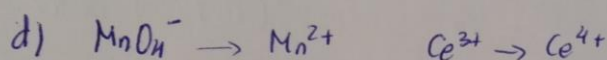
$$\Delta G \text{ será } \oplus \text{ ya que } E^\circ < 0 \text{ (} \Delta G = -nFE \text{)}$$

NO ESPONTÁNEO

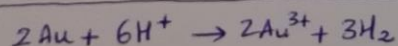
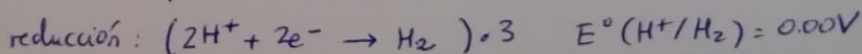
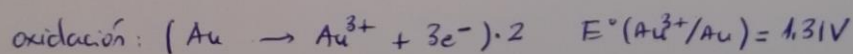


$$E^\circ = 0 - 0.34 < 0$$

Como $E^\circ < 0$, $\Delta G^\circ > 0$ ya que $\Delta G^\circ = -nFE^\circ$, por lo que el proceso no es espontáneo.

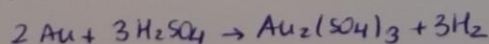


Como $E^\circ < 0$, ΔG° será > 0 (ya que $\Delta G^\circ = -nFE^\circ$) por lo que el proceso no será espontáneo.



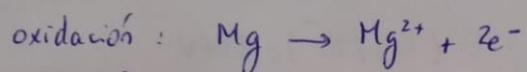
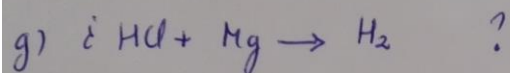
$$E^\circ = E^\circ_{\text{reducción}} - E^\circ_{\text{oxidación}}$$

(catodo) (anodo)

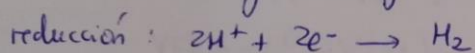


$$E^\circ = 0 - 1.31 < 0$$

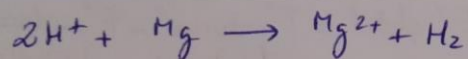
Como $E^\circ < 0$, ΔG° será > 0 ya que $\Delta G^\circ = -nFE^\circ$ por lo que el proceso no es espontáneo.



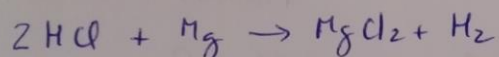
$$E^\circ(\text{Mg}^{2+}/\text{Mg}) = -2,37\text{V}$$



$$E^\circ(\text{H}^+/\text{H}_2) = 0.00\text{V}$$



$$E^\circ = E^\circ_{\text{reducción}} - E^\circ_{\text{oxidación}}$$



$$E^\circ = 0 - (-2,37) > 0$$

Como $E^\circ > 0$, ΔG° será < 0 (ya que $\Delta G^\circ = -nFE^\circ$)
 por lo que el proceso es espontáneo