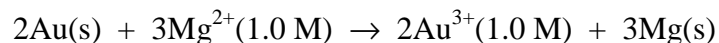
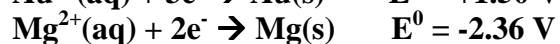
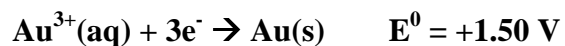


- Calculate the standard free-energy change for the following reaction at 298 K.



The half-cell reduction reactions and potentials are:



In the reaction above, the Au is undergoing oxidation so its potential is reversed and the overall cell potential is:

$$E_{\text{cell}}^{\circ} = (-2.36) - (+1.50) = -3.86\text{ V}$$

Using $\Delta G^{\circ} = -nFE^{\circ}$ for this six electron reaction:

$$\Delta G^{\circ} = -(6) \times (96485) \times (-3.86) = +2.23 \times 10^6\text{ J mol}^{-1} = +2.23 \times 10^3\text{ kJ mol}^{-1}$$

Answer: $+2.23 \times 10^3\text{ kJ mol}^{-1}$