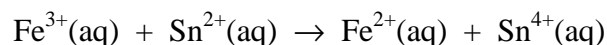
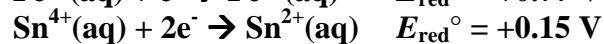
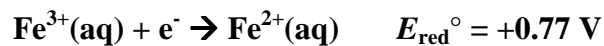


- Consider the following *unbalanced* reaction at 25 °C:

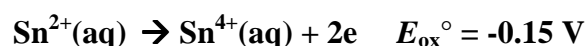


Calculate the standard cell potential.

The two half cells and the standard reduction potentials are:



As the $\text{Sn}^{4+} / \text{Sn}^{2+}$ cell has the least positive reduction potential, it is reversed and becomes the oxidation half cell:



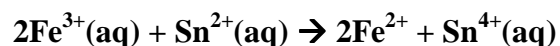
Hence, the standard cell potential is:

$$E^{\circ} = (+0.77 \text{ V}) + (-0.15 \text{ V}) = +0.62 \text{ V}$$

Answer: **+0.62 V**

Calculate the equilibrium constant, K , for the reaction at 25 °C.

Using the half cell reactions above, the balanced equation is:



It involves the transfer of 2 electrons. The equilibrium constant for this 2 electron reaction is therefore given by:

$$E^{\circ} = (RT/nF)\ln K$$

$$\ln K = E^{\circ} \times (nF / RT) = (0.62) \times (2 \times 96485) / (8.314 \times 298) = 48.3$$

$$K = 9.4 \times 10^{20}$$

Answer: **9.4×10^{20}**