



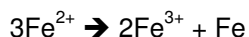
## HONORS WORKSHEET 14a: Electrochemistry I



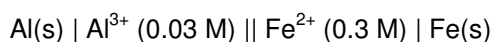
To help solve these problems, use the table of Standard Electrode Potentials here;

<http://www.adriandingleschemistrypages.com/apsrpotentials.pdf>

- When silver metal reacts with bromine at 298 K, a spontaneous REDOX reaction takes place.
  - Calculate the voltage generated by the REDOX reaction. (2)
  - Write the cell diagram for the reaction. (4)
- An electrochemical cell is constructed using a gold half-cell and an aluminum half-cell.
  - Which half-cell will undergo reduction? (1)
  - Which half-cell will be the cathode? (1)
  - Calculate the voltage generated by the cell. (2)
  - If the mass of the aluminum electrode changes by 2.7 g, what will be the change in mass of the gold electrode? (2)
  - Which electrode will increase in mass? Explain. (2)
- Consider the following disproportionation reaction at 298 K.



- Calculate the standard potential,  $E^\ominus$ . (2)
  - What does the value that you have calculated suggest about this reaction? (2)
- Consider the following cell that is operating at 298 K.



- Calculate the voltage that is generated when the cell first starts to work. (2)
- After a period of time has elapsed, the  $[\text{Al}^{3+}]$  has increased from 0.03 M to 0.06 M. Calculate the cell potential at this point in time. (4)