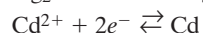
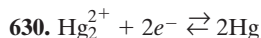
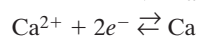
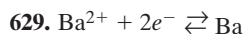
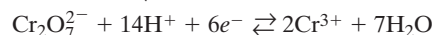
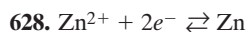
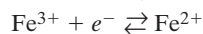
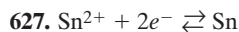
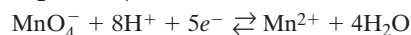
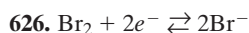
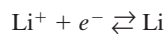
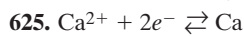
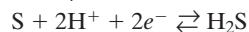
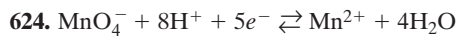
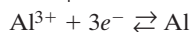
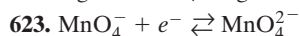
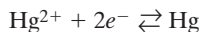
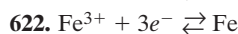
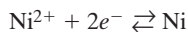
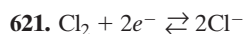


In the following problems, you are given a pair of reduction half-reactions. If a cell were constructed in which the pairs of half-reactions were possible, what would be the balanced equation for the overall cell reaction that would occur? Write the half-reactions that occur at the cathode and anode, and calculate the cell voltage.



For problems 599–606

Reduction Half-reaction	Standard Electrode Potential, E^0 (in volts)	Reduction Half-reaction	Standard Electrode Potential, E^0 (in volts)
$\text{MnO}_4^- + 8\text{H}^+ + 5e^- \rightleftharpoons \text{Mn}^{2+} + 4\text{H}_2\text{O}$	+1.50	$\text{Fe}^{3+} + 3e^- \rightleftharpoons \text{Fe}$	−0.04
$\text{Au}^{3+} + 3e^- \rightleftharpoons \text{Au}$	+1.50	$\text{Pb}^{2+} + 2e^- \rightleftharpoons \text{Pb}$	−0.13
$\text{Cl}_2 + 2e^- \rightleftharpoons 2\text{Cl}^-$	+1.36	$\text{Sn}^{2+} + 2e^- \rightleftharpoons \text{Sn}$	−0.14
$\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 6e^- \rightleftharpoons 2\text{Cr}^{3+} + 7\text{H}_2\text{O}$	+1.23	$\text{Ni}^{2+} + 2e^- \rightleftharpoons \text{Ni}$	−0.26
$\text{MnO}_2 + 4\text{H}^+ + 2e^- \rightleftharpoons \text{Mn}^{2+} + 2\text{H}_2\text{O}$	+1.22	$\text{Cd}^{2+} + 2e^- \rightleftharpoons \text{Cd}$	−0.40
$\text{Br}_2 + 2e^- \rightleftharpoons 2\text{Br}^-$	+1.07	$\text{Fe}^{2+} + 2e^- \rightleftharpoons \text{Fe}$	−0.45
$\text{Hg}^{2+} + 2e^- \rightleftharpoons \text{Hg}$	+0.85	$\text{S} + 2e^- \rightleftharpoons \text{S}^{2-}$	−0.48
$\text{Ag}^+ + e^- \rightleftharpoons \text{Ag}$	+0.80	$\text{Zn}^{2+} + 2e^- \rightleftharpoons \text{Zn}$	−0.76
$\text{Hg}_2^{2+} + 2e^- \rightleftharpoons 2\text{Hg}$	+0.80	$\text{Al}^{3+} + 3e^- \rightleftharpoons \text{Al}$	−1.66
$\text{Fe}^{3+} + e^- \rightleftharpoons \text{Fe}^{2+}$	+0.77	$\text{Mg}^{2+} + 2e^- \rightleftharpoons \text{Mg}$	−2.37
$\text{MnO}_4^- + e^- \rightleftharpoons \text{MnO}_4^{2-}$	+0.56	$\text{Na}^+ + e^- \rightleftharpoons \text{Na}$	−2.71
$\text{I}_2 + 2e^- \rightleftharpoons 2\text{I}^-$	+0.54	$\text{Ca}^{2+} + 2e^- \rightleftharpoons \text{Ca}$	−2.87
$\text{Cu}^{2+} + 2e^- \rightleftharpoons \text{Cu}$	+0.34	$\text{Ba}^{2+} + 2e^- \rightleftharpoons \text{Ba}$	−2.91
$\text{S} + 2\text{H}^+(\text{aq}) + 2e^- \rightleftharpoons \text{H}_2\text{S}(\text{aq})$	+0.14	$\text{K}^+ + e^- \rightleftharpoons \text{K}$	−2.93
$2\text{H}^+(\text{aq}) + 2e^- \rightleftharpoons \text{H}_2$	0.00	$\text{Li}^+ + e^- \rightleftharpoons \text{Li}$	−3.04