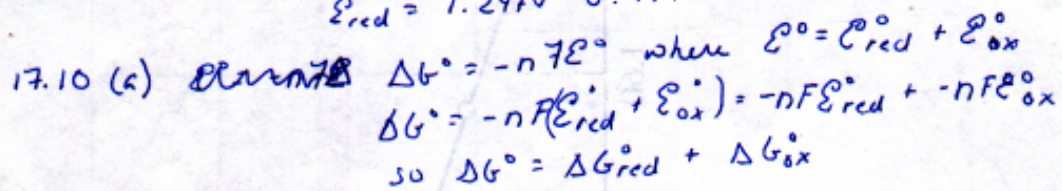


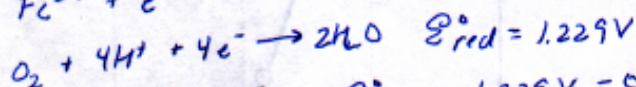
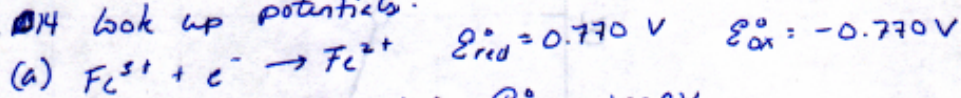
We are also given:

$$E_{\text{ox}} + E_{\text{red}} = 1.247\text{V}$$

$$E_{\text{red}} = 1.247\text{V} - 0.447\text{V} = 0.800\text{V}$$



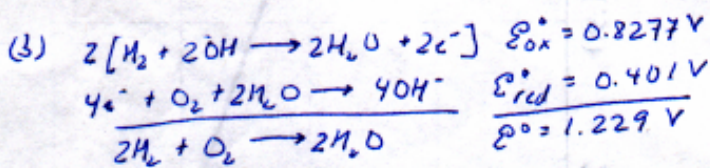
17.14 look up potentials:



$$E_{\text{ran}}^{\circ} = E_{\text{ox}}^{\circ} + E_{\text{red}}^{\circ} = 1.229\text{V} - 0.770\text{V} = 0.459\text{V}$$

$$\Delta G^{\circ} = -nFE_{\text{ran}}^{\circ} = -4 \text{ mole } e^- \times \frac{96485\text{C}}{\text{mole } e^-} \times \frac{0.459\text{J}}{\text{C}} = -1.77 \times 10^5\text{J}$$

so spontaneous



$$\Delta G^{\circ} = -nFE^{\circ}$$

$$= -4 \text{ mole } e^- \times \frac{96485\text{C}}{\text{mole } e^-} \times \frac{1.229\text{J}}{\text{C}}$$

$$= -4.743 \times 10^5\text{J}$$

so spontaneous

(c) reverse of above,  $+474\text{kJ/mole}$  so not spontaneous.