1. Problem 7.1

2. Problem 7.9. You should be able to derive the energy balance for a closed system from the general energy balance (e.g. equation 13 in the Chapter 7 handout). Note that the HW solution does not define the "system". In doing this problem, however, defining what the system is should be the first thing you do.

3. Problem 7.18. Note the definitions in this problem. Steady state is assumed. Moreover, relative to equation 12 from the class handout the following definitions are being used:

\[
\Delta\hat{H} = \sum_{\text{outputs}} \dot{m}_j \hat{H}_j - \sum_{\text{inputs}} \dot{m}_j \hat{H}_j
\]

\[
\Delta\hat{E}_k = \sum_{\text{outputs}} \dot{m}_j \frac{u_j^2}{2} - \sum_{\text{inputs}} \dot{m}_j \frac{u_j^2}{2}
\]

\[
\Delta\hat{E}_p = \sum_{\text{outputs}} \dot{m}_j g_{z_j} - \sum_{\text{inputs}} \dot{m}_j g_{z_j}
\]

4. Problem 7.25

5. Problem 7.42. I believe there is a numerical mistake in these solutions, although the overall approach is correct. In particular, answer to part a) should come out to 18,200 cal. Also, for part b), the heat added to the reboiler should be $8.95 \times 10^5$ cal. The rest of it appears correct.

Problem solutions will be distributed separately.