As the schedule says, these problems are due on Day 5 (Wednesday), on paper, at the start of class.

- Is there a linear combination of the vectors

$$\begin{bmatrix} 2 \\ -1 \end{bmatrix}, \begin{bmatrix} 4 \\ 0 \end{bmatrix}$$

that equals the vector

$$\begin{bmatrix} 1 \\ 1 \end{bmatrix}?$$

To answer this question, re-express it as a linear system of two equations in two unknowns, and find the solution or explain why no solution exists.

- Section 1.4 #1, 2, 3, 4. The book asks you to do each computation twice. Don't do that. Just compute the answer once, or explain why the answer is undefined.

- Section 1.4 #6, 8, 15.

- Section 1.6 #5. I am not asking you to solve it right now. Instead, please just write it as an equation of the form $A\vec{x} = \vec{b}$, being clear about what A, $\vec{x}$, and $\vec{b}$ are. (To say that the chemical equation is "unbalanced" is to say that it's missing the coefficients that make it true. For example, there may be x molecules of B_2S_3 involved, so the first term should be xB_2S_3. Once you supply the needed coefficients, the problem should start to look like the similar problem that we did on Day 1.)

- Solve the preceding chemistry problem using Mathematica. You can do this by mimicking our Mathematica notebook linearSystems.nb. Either print out the Mathematica code and results or copy them by hand onto paper. Yes, you are required to use Mathematica rather than some other tool or approach. The educational point of this exercise is to get you using Mathematica.