Textbook reading for this week:
Study items:

- Definition: the composition of two linear transformations.
- How do you compute the matrix representation of a composition of linear transformations?
- Be able to multiply matrices when compatible.
- Compute the change-of-basis matrix for two different bases of the same vector space.
- Use the change-of-basis formula to compute the matrix representation of a linear transformation.
- The formulas for 2×2 and 3×3 determinants.
- The geometric meaning of determinant, in terms of volume expansion.

Problems:

1. Let $T : V \to W$ be an invertible linear transformation, and let α, β be bases for V, W, respectively. Prove that
$$[T]_\alpha^\beta [T^{-1}]_\beta^\alpha = I_n,$$
where $n = \dim V$. Conclude that $\left([T]_\alpha^\beta\right)^{-1} = [T^{-1}]_\beta^\alpha$.
2. *(Damiano–Little 2.6.3(a,e,g))* (Determine if a matrix is invertible, and find the inverse if so)
3. *(Damiano–Little 2.7.2)* (determine matrix in standard basis given some values)
4. *(Damiano–Little 2.7.4(b,c))* (find representation in standard basis from representation in another basis)
5. *(Damiano–Little Chapter 2 supplementary (pp. 130-132), #3)*
6. *(Damiano–Little Chapter 2 supplementary (pp. 130-132), #5)*
7. *(Damiano–Little 3.1.3)* (2×2 determinants)
8. *(Damiano–Little 3.1.4)* (determinant of a rotation matrix)
9. *There will be some part of this assignment based on Manuel González Villa's guest class on Friday, April 22. This part will be filled in soon. Check back here after Friday's class for an update.*