MATH 2360-012 WEEK 11

SECTIONS 6.3 AND 6.4; PAGES 320–335

Abstract. We know that an $m \times n$ matrix defines a linear transformation from $\mathbb{R}^n$ to $\mathbb{R}^m$. In fact, every linear transformation $\mathbb{R}^n \to \mathbb{R}^m$ is represented by an $m \times n$ matrix. Moreover, given a linear transformation $T\colon V \to W$ of vector spaces with $\dim V = n$ and $\dim W = m$, we can, after choices of bases identify V and W with $\mathbb{R}^n$ and $\mathbb{R}^m$, respectively, and then T is represented by an $m \times n$ matrix.

Section 6.3

Reading. Make sure that you understand the following:

(1) How to find the standard matrix for a linear transformation.
(2) That composition of linear transformations corresponds to multiplication of the matrices that represent them.
(3) How to find the matrix that represents a linear transformation relative to non-standard bases.

Suggested problems. To verify that you have understood the material, solve the following problems at the end of the section: 3, 5, 9, 13, 33, and 43.

Section 6.4

Reading. Make sure that you understand the following:

(1) What Figure 6.10 shows.
(2) Similar matrices represent the same linear transformation relative to different bases.

Suggested problems. To verify that you have understood the material, solve the following problems at the end of the section: 3–7, 17, and 25.

Date: October 28, 2020.