

The Matrix of a Linear Transformation

MATH 204: Linear Algebra

Prepare for class September 28, 2018

Name (Print): _____

After reading Section 1.9 (pages 71-78), work through the following ideas.

1. The identity matrix was defined back on page 39.

(a) Do you remember what it is? Draw I_2 , I_3 and I_n .

(b) Then describe what the columns of I_2 are. Do you recognize them?

2. If $\mathbf{b} = \begin{bmatrix} 9 \\ 29 \\ 2017 \end{bmatrix}$, compute $I_3 \mathbf{b}$. Generalize this result.

3. (a) State Theorem 10.

(b) The proof of Theorem 10 (The Standard Matrix Theorem) has two parts. What are they?

4. Use the Standard Matrix Theorem to answer Section 1.9 exercise 1 on page 79.

5. (a) Give the definition of an **onto** mapping in relation to vectors.

(b) What does it mean when a mapping is *not* onto?

6. (a) Give the definition of an **one-to-one** mapping in relation to vectors.

(b) What does it mean when a mapping is *not* one-to-one?