

Characterizations of Invertible Matrices

MATH 204: Linear Algebra
Prepare for class October 15, 2018

Name (Print): _____

After reading Section 2.3, work through the following ideas.

1. Theorem 2.8 (The Invertible Matrix Theorem) is **incredibly important!** It is also long – twelve parts!

(a) Write down the whole theorem! It will help you remember it!

(b) Read carefully what we need to do to prove this theorem. Briefly give an outline of their approach. Do you see why it works?

(c) Do you see what is embedded in the midst of this theorem?

2. (a) State the fact at the bottom of page 114.

(b) This should remind you of a true/false question we asked earlier. Do you remember? How could we change the original true/false statement to change the answer?

3. Use The Invertible Matrix Theorem to determine if the matrices in Exercises 1 and 3 of Section 2.3 (page 117) are invertible.

4. Write down the definition of what it means for a linear transformation to be invertible. Draw a diagram to illustrate the definition.

5. State Theorem 9. Note that the theorem refers to equations (1) and (2). Include those in your statement of the theorem.

6. Carefully prove the first direction of Theorem 9. That is, show that if T is invertible, then A is invertible. This proof is the first paragraph of the proof on page 116. Work through each step carefully. Make sure you know exactly what theorem or definition allows you to make each step.

7. Write down any questions you have on the reading.