

Name: _____ Sort #: _____

Worksheet 18: Linear Algebra Tutorial I

MATH 2310, Spring 2019

Grade: _____ / 40

You may use your calculator to assist in your calculations. You must cite specifically where you do so and which calculation was performed. The emphasis here is to explain what you are doing and why, not necessarily being able to do all of the matrix operations by hand.

1. (a) (4 pts) Write a matrix equation that is equivalent to the system of equations.

$$\begin{array}{rcccccl} x_1 & - & 2x_2 & + & x_3 & = & 0 \\ & & 2x_2 & - & 8x_3 & = & 8 \\ 5x_1 & & & - & 5x_3 & = & 10 \end{array} \quad (1)$$

- (b) (6 pts) Solve the system from part (a).

2. (10 pts) Find the inverse of $A = \begin{bmatrix} 1 & 2 \\ 4 & 7 \end{bmatrix}$ by hand. Verify the result by calculating AA^{-1} and $A^{-1}A$ (by hand).

3. (10 pts) Find the inverse of $A = \begin{bmatrix} 1 & 0 & 2 \\ -3 & 1 & 4 \\ 2 & -3 & 4 \end{bmatrix}$

4. (10 pts) Find the determinant of $B = \begin{bmatrix} 4 & 3 & 0 \\ 6 & 5 & 2 \\ 9 & 7 & 3 \end{bmatrix}$