

MATH 3A HOMEWORK 2

DUE: Friday, Oct 14

READING ASSIGNMENT: Read Sections 1.4, 1.5, 1.6, 1.7

PROBLEMS FROM TEXTBOOK:

Section 1.4: 2, 7, 10, 12, 22

Section 1.5: 2, 5, 15, 18, 37, 38

Section 1.6: 3(a)(b), 13

Section 1.7: 2, 6, 12, 20, 27, 28, 35, 40

ADDITIONAL PROBLEMS:

1) Determine if the following statements are True or False. Justify your answers (if you think the statement is true, explain why; if you think the statement is false, give a counter-example).

- (a) If S is a linearly dependent set, then each vector in S is a linear combination of the other vectors in S .
- (b) The columns of any 7×5 matrix are always linearly dependent.
- (c) Let \vec{u} be a vector. Then the set $\{\vec{u}\}$ is always linearly independent.
- (d) If A is $m \times n$ matrix and there is some $\vec{b} \in \mathbb{R}^m$ such that $A\vec{x} = \vec{b}$ is inconsistent. Then A cannot have a pivot position in every row.

2) Show that the following statement is true: If the set $\{\vec{u}, \vec{v}, \vec{w}\}$ is linearly independent, then so is the set $\{\vec{u}, \vec{u} + \vec{v}, \vec{u} + \vec{v} + \vec{w}\}$.