

Linear Algebra (MATH 3333 - 04) Spring 2011

Homework 5

Due: Mon. Mar. 21, start of class

Instructions: Please read the homework policies and guidelines posted on the course webpage. You may **not** use a calculator (or computer). Make sure to write your name, course and section numbers in the top right corner of your solution set, as well as the assignment number on top. Please staple your homework. Sections and exercises refer to the exercises in the required course text.

Conceptual Questions (not to be turned in)

1. What is a vector space and why did we define it?
2. What is the relationship between vector spaces and images of linear transformations?

Written Assignment

Total: 100 points

Each problem is worth 10 points unless stated otherwise.

Section 4.2 (pp. 196–197): 1, 2, 7 (5 pts), 8 (5 pts), 13, 21, 24

Section 4.3 (pp. 205–206): 2 (5 pts), 5, 6 (no justification is needed for 5 and 6)

Problem A. (15 pts) Draw the cone $C = \{(x, y, z) | x^2 + y^2 = |z|\}$. Is it the image of some linear transformation $A : \mathbb{R}^m \rightarrow \mathbb{R}^3$? Justify your answer (prove it).