

M341 (92150), Homework #8

Due: 10:00am, Monday, Aug. 05

*Instructions: Questions are from the book "Elementary Linear Algebra, 4th ed." by Andrilli & Hecker. Please show all your work, not only your final answer, to receive credit. Keep answers organized in the same order the problems have been assigned.*

**Vector spaces (4.1)**

p. 213-215, #3, 5, 7, 12, 13, 18

**Subspaces (4.2)**

p. 223-227, #1(a,c,d), 2(f,h), 6, 11, 15, 18

In addition:

- A) Let  $\mathcal{A} = \mathbb{R}$ , with the operations  $\oplus$  and  $\odot$  given by  $\mathbf{x} \oplus \mathbf{y} = (x^5 + y^5)^{1/5}$  and  $a \odot \mathbf{x} = a\mathbf{x}$ . Is  $\mathcal{A}$  a vector space? If it is, prove it. If not, how would you modify the definition of scalar multiplication so that  $\mathcal{A}$  becomes a vector space?