Due date:
Friday, 2/19, **due 6pm, submit through Canvas**.

Instructions:
Students are encouraged to work together and discuss the homework problems, however each student must write up the solutions in their own words. Homework solutions should be well-explained, except True/False questions unless requested otherwise.

The format of HW is not restricted, but the PDF file is the preferred one.

Problem 1. Let S be a set $\{(a_1, a_2) : a_1, a_2 \in \mathbb{R}\}$. If (a_1, a_2) and (b_1, b_2) are elements in S and $c \in \mathbb{R}$, we define the addition and scaling by

$$(a_1, a_2) + (b_1, b_2) = (a_1 + b_1, a_2 + b_2),$$

and for $c \in \mathbb{R}$,
$$c(a_1, a_2) = (ca_1, 0).$$

Is S a vector space with these operations? Justify your answer.

Problems in [1]:
Pages 85–86, problems 2.2.1, 2.2.2(b,c,e), 2.2.8, 2.2.17
Pages 91–92, problems 2.3.7, 2.3.8(a)
Page 97, problems 2.3.22(a), 2.3.22(b)(ii), 2.3.31, 2.3.32(a)

References

[1] Peter Olver and Chehrzad Shakiban, Applied Linear Algebra, 2nd Edition