

MATH 240 QUIZ 5

Name: _____

Question:

Consider the set $S = \{(x, y) \in \mathbb{R}^2 \mid x \geq 0, y \geq 0\}$, does it form a vector space? Please show your work.

Solution:

It is not a vector space since it fails axiom 2, namely, if we take a vector $v = (1, 1) \in S$, and take a scalar $c = -1 \in \mathbb{R}$, we see that

$$cv = (-1, -1) \notin S.$$