

MATH 240 QUIZ 6

Name: _____

Question:

Determine whether the set $S = \{(1, -1, 1), (1, 1, 0), (1, 0, 1), (0, 1, 1)\}$ is a basis for \mathbb{R}^3 . Please show your work.

Solution:

S is not a basis since the vectors in S are linearly dependent, we can check this directly as

$$(1, -1, 1) = \frac{3}{2}(1, 0, 1) - \frac{1}{2}(1, 1, 0) - \frac{1}{2}(0, 1, 1).$$