

**MATH 54 SUMMER 2017, QUIZ 9**

Mark each of the following true or false and give a short explanation.

(a) The set of nonnegative real numbers (i.e.  $[0, \infty)$ ) is a subspace of  $\mathbb{R}$ .

(b)  $\{\mathbf{0}\}$  is a subspace of  $\mathbb{R}^n$ .

(c) There are vectors  $\mathbf{v}_1$  and  $\mathbf{v}_2$  in  $\mathbb{R}^3$  such that  $\{\mathbf{v}_1, \mathbf{v}_2, 3\mathbf{v}_1 + \mathbf{v}_2\}$  is a basis for  $\mathbb{R}^3$ .

(d) The following vectors are a basis for  $\mathbb{R}^3$ :

$$\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}.$$