Quiz 1 — 31 August 2018   Name:

Question 1 (2 pts). Mark each statement true or false, and give a brief justification of your answer.

(a) In any vector space, $ax = 0$ implies $a = 0$. (Here a is a scalar and x is a vector).

(b) The set $W = \{(a_1, a_2, a_3) \in \mathbb{R}^3 : a_1 < a_2\}$ is a subspace of $\mathbb{R}^3$.

Question 2 (4 pts). Show that the set $\{(1,3,3), (1,1,0), (1,-1,-3)\}$ is linearly dependent.

Question 3 (4 pts). Let W_1 and W_2 be subspaces of a vector space V. Show that if $W_1 \cup W_2 = V$ then $W_1 = V$ or $W_2 = V$.