

MATH 350: Linear Algebra
Quiz 1

NAME: _____

Date: September 20, 2018

Solve the following problems on this sheet of paper. No calculators or other electronic devices are permitted.

1. (5 points) Let U be the subspace of \mathbb{R}^5 (over \mathbb{R}) defined by

$$U = \{(x_1, x_2, x_3, x_4, x_5) \in \mathbb{R}^5 \mid x_1 = 3x_2, x_3 = 7x_4\}.$$

Find a basis for U (that is, find a linearly independent spanning set of vectors in \mathbb{R}^5).

2. (5 points) Let u_1 and u_2 be distinct vectors in a vector space V . Show that $\{u_1, u_2\}$ is linearly dependent if and only if u_1 or u_2 is a multiple of the other.