

MATH 54 FALL 2016: DISCUSSION 102/105 QUIZ#2

GSI: CHRISTOPHER EUR, DATE: 9/9/2016

STUDENT NAME: _____

Problem 1. (5 points) Suppose A is a 3×5 matrix and $\vec{u}_1, \vec{u}_2 \in \mathbb{R}^5$ such that $A\vec{u}_1 = \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$ and $A\vec{u}_2 = \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}$. Find the solution for $A\vec{x} = \begin{bmatrix} -4 \\ 6 \\ 1 \end{bmatrix}$ in terms of \vec{u}_1 and \vec{u}_2 .

Problem 2. (5 points) Let $v_1, v_2, v_3 \in \mathbb{R}^3$ such that $\{v_1, v_2\}$, $\{v_2, v_3\}$, and $\{v_3, v_1\}$ are each linearly independent sets of vectors. Then is it necessarily true that $\{v_1, v_2, v_3\}$ is a linearly independent set of vectors? If true, prove it. If false, give a counterexample.