

Math 1553, Quiz 4 (2.5–3.1), Fall 2026, Version A

Name (ALL CAPS)	Key	GT ID		Section	
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Please write your name in ALL CAPS. For questions with bubbles, either fill in the bubble completely or leave it blank. **Do not** mark any bubble with “X” or “/” or any such intermediate marking. Anything other than a blank or filled bubble will be given a score of zero.

1. (1 point) If $Ax = b$ is a consistent system of linear equations for some vector b in $\mathbf{R}^m$ and $T(x) = Ax$, then b is in the range of T .

☒ TRUE ☐ FALSE

2. (1 point) Which of the following sets of vectors are linearly independent? Fill in the bubble for all that apply.

☒ $\left\{ \begin{pmatrix} 1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 1 \end{pmatrix} \right\}$
☐ $\left\{ \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 3 \\ 1 \end{pmatrix}, \begin{pmatrix} 5 \\ 6 \\ 7 \end{pmatrix} \right\}$

$\begin{bmatrix} 1 & 2 & 5 \\ 1 & 3 & 6 \\ 2 & 1 & 7 \end{bmatrix} \sim \begin{bmatrix} 1 & 2 & 5 \\ 0 & 1 & 1 \\ 0 & -3 & -3 \end{bmatrix}$
 $\sim \begin{bmatrix} 1 & 2 & 5 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}$ lin dep. column!

3. (1 point) Let S be the set of all vectors $\begin{pmatrix} x \\ y \end{pmatrix}$ in $\mathbf{R}^2$ satisfying $|x| = |y|$. Which of the properties of a subspace of $\mathbf{R}^2$ does S satisfy? Answer yes or no in each case.

(i) Is S closed under scalar multiplication? In other words, if u is in S and c is a scalar, is cu in S ? ☒ YES ☐ NO

(ii) Is S closed under addition? In other words, if u and v are in S , must $u + v$ also be in S ? ☐ YES ☒ NO

