

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

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 $A = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$ is the 2×3 zero matrix and $T(x) = Ax$, then the domain of T is $\mathbf{R}^3$ and the codomain of T is $\mathbf{R}^2$.

✓

✓

☒ TRUE ☐ FALSE

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

☐ $\left\{ \begin{pmatrix} 3 \\ 3 \end{pmatrix}, \begin{pmatrix} 4 \\ 4 \end{pmatrix} \right\}$

☐ $\left\{ \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 4 \\ 5 \\ 7 \end{pmatrix} \right\}$

$\begin{bmatrix} 1 & 2 & 4 \\ 2 & 1 & 5 \\ 3 & 1 & 7 \end{bmatrix} \sim \begin{bmatrix} 1 & 2 & 4 \\ 0 & -3 & -3 \\ 0 & -5 & -5 \end{bmatrix}$

(both blank)

$\sim \begin{bmatrix} 1 & 2 & 4 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}$ lin. dep. rows!

3. (1 point) Let S be the set of all vectors $\begin{pmatrix} x \\ y \end{pmatrix}$ in $\mathbf{R}^2$ satisfying $x \geq y$. 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

