Mock Quiz 1

CAS CS 132: *Geometric Algorithms*

September 15, 2025

Name:

BUID:

- ▷ You will have approximately 30 minutes to complete this exam.
- ▷ Your final solution must appear in the solution boxes for each problem. **Only include your final solution in the solution box. You must show your work outside of the solution box.** You will not recieve credit it you don't show your work.

1 Row Operations

Apply the row operations:

$$\begin{aligned} R_1 &\leftarrow R_1 - R_3 \\ R_2 &\leftrightarrow R_3 \\ R_3 &\leftarrow R_3 + 2R_1 \end{aligned}$$

from top to bottom to the following matrix. You must write down the intermediate matrices.

$$\begin{bmatrix} 9 & -10 & -9 \\ 0 & 5 & -4 \\ 7 & 8 & -5 \end{bmatrix}$$

Solution. (the final matrix only)

2 Reduced Echelon Forms

Determine the reduced echelon form of the following matrix. You must write down the intermediate matrices and row operations you used in your calculation.

$$\begin{bmatrix} 1 & -5 & 1 & 2 \\ 2 & -10 & 3 & 6 \\ -1 & 5 & 0 & 0 \end{bmatrix}$$

Solution. (the final RREF only)

3 General Form Solutions

Determine a general form solution for a linear system whose augmented matrix is row equivalent to the following matrix.

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

Solution.