Solutions

Quiz 1 MATH 231
Wednesday, September 10, 2025 Spring 2025

Problem 1. Find the elementary row operation that transforms the first matrix into the second.

$$\begin{bmatrix} 1 & -2 & 1 & 0 \\ 0 & 5 & -2 & 8 \\ 4 & -1 & 3 & -6 \end{bmatrix}, \begin{bmatrix} 1 & -2 & 1 & 0 \\ 0 & 5 & -2 & 8 \\ 0 & 7 & -1 & -6 \end{bmatrix}$$

Multiply first row by -4 and add to the third row.

Problem 2. Consider the matrix:

$$A = \begin{bmatrix} 1 & 3 & 5 \\ 0 & 1 & 2 \end{bmatrix}$$

(a) **True or false**: the matrix A is in row echelon form.

True

(b) Explain why the matrix A is **not** in *reduced* row echelon form.

The second column has a leading 1, so all other entries in the column should be 0.

(c) Find the reduced row echelon form of the matrix A.

$$\text{rref}(A) = \begin{bmatrix} 1 & 0 & -1 \\ 0 & 1 & 2 \end{bmatrix}$$