

In questions 1-4, state whether the matrices are in echelon form, reduced row echelon form (RREF) or neither form.

Question 1
$$\begin{bmatrix} 0 & 2 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$$

Multiple Choice:

- (a) *Echelon form* ✓
 - (b) *RREF*
 - (c) *neither*
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Question 2
$$\begin{bmatrix} 1 & 2 & 4 \\ 0 & 0 & 0 \\ 0 & 1 & 3 \end{bmatrix}$$

Multiple Choice:

- (a) *Echelon form*
 - (b) *RREF*
 - (c) *neither* ✓
-

Question 3
$$\begin{bmatrix} 1 & 0 & 0 & 4 & 9 & 0 \\ 0 & 0 & 1 & 3 & 2 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

Multiple Choice:

- (a) *Echelon form* ✓
 - (b) *RREF*
 - (c) *neither*
-

Question 4
$$\begin{bmatrix} 1 & 0 & 3 & 0 & 8 & 0 \\ 0 & 1 & 1 & 0 & 3 & -4 \\ 0 & 0 & 0 & 1 & 0 & -5 \end{bmatrix}$$

Multiple Choice:

- (a) Echelon form
- (b) RREF ✓
- (c) neither

Question 5 Given the augmented matrix below that corresponds to a linear system in variables x_1, x_2, x_3 , and x_4 , what is the correct parametric description of the solution set?

$$\left[\begin{array}{cccc|c} 0 & 1 & 4 & 0 & 2 \\ 0 & 0 & 0 & 1 & 7 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{array} \right]$$

Multiple Choice:

- (a) $\begin{cases} x_1 = 2 - x_2 - 4x_3 \\ x_2 = 7 \\ x_3 \text{ is free} \\ x_4 \text{ is free} \end{cases}$
- (b) $\begin{cases} x_1 = 2 - x_2 - 4x_3 \\ x_2 \text{ is free} \\ x_3 = 7 \\ x_4 \text{ is free} \end{cases}$
- (c) $\begin{cases} x_1 \text{ is free} \\ x_2 = 2 - 4x_3 \\ x_3 \text{ is free} \\ x_4 = 7 \end{cases}$ ✓
- (d) no solution

The pivots of this matrix appear in columns 2 and 4.