If $(x, y, z) = (1, -1, -1)$ is a solution of the following linear system

$$\begin{aligned} x + y - z &= \alpha \\ x + \beta y + z &= \beta \\ x + y + \alpha z &= \bar{o} \end{aligned}$$

then:

- ○ $\alpha = -1,\ \beta = 0,\ \bar{o} = 1$
- ○ $\alpha = 1,\ \beta = \frac{1}{2},\ \bar{o} = -1$
- ○ $\alpha = -1,\ \beta = \frac{1}{2},\ \bar{o} = 1$
- ◉ $\alpha = 1,\ \beta = 0,\ \bar{o} = -1$

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Let $A^{-1}=\begin{bmatrix} 3 & -2 & -1 \\ -4 & 1 & -1 \\ 2 & 0 & 1 \end{bmatrix}$, where A denote the matrix of coefficients of the following linear system:

$$\begin{aligned} x_1+2x_2+3x_3 &= 0 \\ 2x_1+5x_2+7x_3 &= 0 \\ -2x_1-4x_2-5x_3 &= 1. \end{aligned}$$

Then its solution set is equal to:

- [x] $\{(-1,\ -1,\ 1)\}$
- [ ] $\{(3,\ -4,\ 2)\}$
- [ ] $\{(1,\ -1,\ -1)\}$
- [ ] $\{(-1,\ 1,\ -1)\}$

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Let $\mathbf{A}adj(\mathbf{A}) = \begin{bmatrix} -2 & 0 & 0 \\ 0 & -2 & 0 \\ 0 & 0 & -2 \end{bmatrix}$. Then $det(\mathbf{A})$ is equal to:

- [x] -2
- [ ] $-\sqrt[3]{2}$
- [ ] -2^3
- [ ] 2

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Question 6

Let $\begin{bmatrix} 2 & 3 & \lambda^2 & 0 \\ 1 & 2 & 1 & 0 \\ 1 & 3 & 7 & 0 \end{bmatrix}$ be the augmented matrix of a homogeneous linear system.

Then the set of values of λ for which the system has a no nontrivial solution is equal to:

- $\mathbb{R}$
- $\mathbb{R} \setminus \{-2, 2\}$
- $\mathbb{R} \setminus \{2\}$
- $\{\ \}$

⚠ Moving to the next question prevents changes to this answer.

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Let the matrices $A, B \in M_3(\mathbb{R})$ be singular matrices. Then the determinant $|2I + 2B^T B A\,adj(A)|$ is equal to:

- [x] 8
- [ ] 4
- [ ] 2
- [ ] 1

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stion 3

The matrix $\begin{bmatrix} 1 & 1 & 1 \\ 1 & m & 2 \\ 1 & 10 & m \end{bmatrix}$ is non-invertible if and only if:

- ○ $m \notin \{-2,4\}$
- ○ $m \in \mathbb{R}\backslash\{-4,2\}$
- ◉ $m \in \{-2,4\}$
- ○ $m \in \{2,-4\}$

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Which of the following matrices is an elementary matrix?

- $\begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$
- $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}^T$
- $\begin{bmatrix} \sqrt{2} & 1 \\ 0 & 1 \end{bmatrix}$
- $\begin{bmatrix} -2 & 0 \\ -2 & 1 \end{bmatrix}$

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The reduced row echelon form of the matrix $\begin{bmatrix} 0 & 2 & -1 \\ -1 & 1 & 0 \\ 0 & -1 & 1 \end{bmatrix}$ is:

- ○ $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$
- ○ $\begin{bmatrix} 1 & 2 & -1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
- ○ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \end{bmatrix}$
- ◉ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

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