

<u>Help</u> Ţ

sandipan_dey 🗸

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E2.3.3 Questions 5-6

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■ Calculator

Exam 2 due Dec 3, 2023 04:42 IST Completed

E2.3.3 Questions 5-6

Question 5

Answer: 0

10.0/10.0 points (graded) Compute

(a)
$$\begin{pmatrix} 1 & -2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 3 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & -3 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix} =$$

Answer: 0

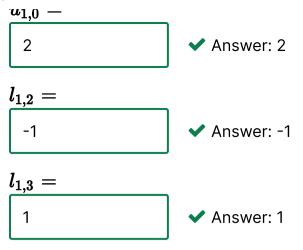
Answer: 1

(b)
$$\begin{pmatrix} 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & -3 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix} \begin{pmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{pmatrix} =$$

Answer: 0

$$\text{(c)} \begin{pmatrix} 1 & u_{1,0} & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & l_{1,2} & 1 & 0 \\ 0 & l_{1,3} & 0 & 1 \end{pmatrix} \begin{pmatrix} 2 & -1 \\ -1 & 2 \\ -1 & 2 \\ 1 & -2 \end{pmatrix} = \begin{pmatrix} 0 & 3 \\ -1 & 2 \\ 0 & 0 \\ 0 & 0 \end{pmatrix}$$

⊞ Calculator



(a) (3 points)

$$\begin{pmatrix} 1 & -2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 3 & 1 & 0 \\ 0 & -1 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & -3 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix} = I$$

Answer: These are Gauss transforms that can be easily recognized to be inverses of each other.

(b) (3 points)

$$\begin{pmatrix} 1 & 2 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & -3 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix} \begin{pmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 2 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ -3 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 \end{pmatrix}$$

Answer: Multiplication from the right with a permutation matrix permutes the columns of a matrix.

(c) (4 points)

Fill in the boxes:

$$\begin{pmatrix}
1 & 2 & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & -1 & 1 & 0 \\
0 & 1 & 0 & 1
\end{pmatrix}
\begin{pmatrix}
2 & -1 \\
-1 & 2 \\
-1 & 2 \\
1 & -2
\end{pmatrix} = \begin{pmatrix}
0 & 3 \\
-1 & 2 \\
0 & 0 \\
0 & 0
\end{pmatrix}$$

Submit

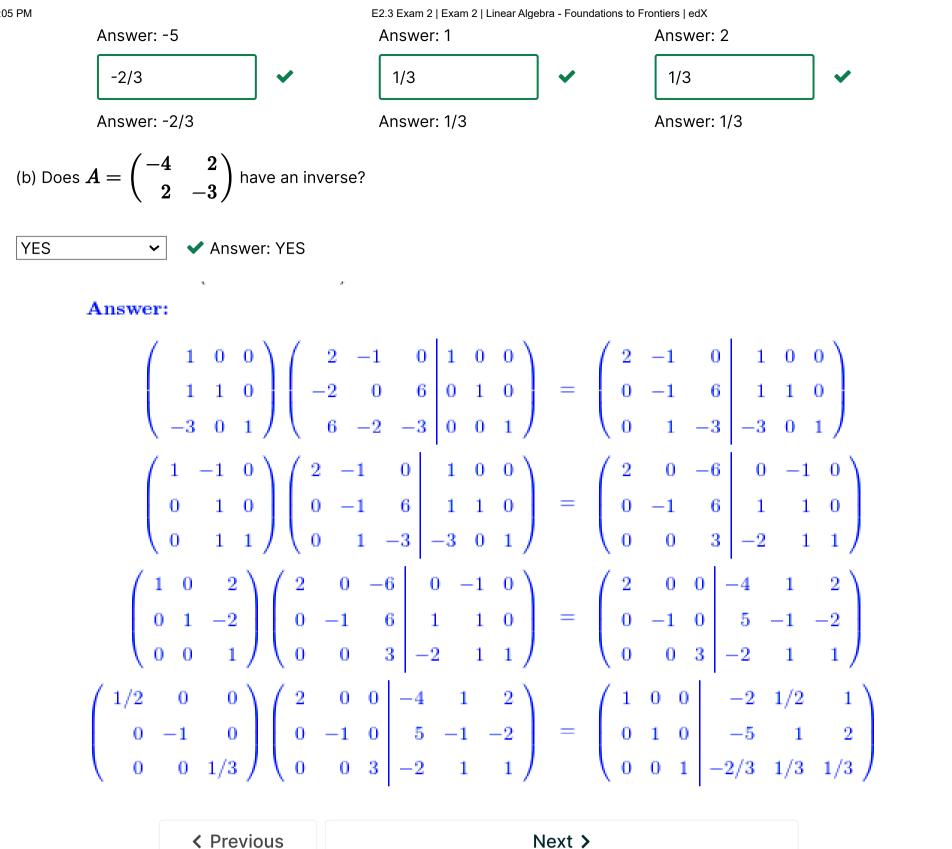
Answers are displayed within the problem

Question 6

15.0/15.0 points (graded)

(a) Invert
$$A=egin{pmatrix}2&-1&0\-2&0&6\6&-2&-3\end{pmatrix}$$
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