You can preview this quiz, but if this were a real attempt, you would be blocked because:

This quiz is not currently available

Question 1

Not complete

Points out of 2.00

Use these questions as a way to review and solidify the language of linear algebra as well as computations and conceptual understanding. If you are stuck, use ASULearn resources and your notes to help you. I'm also happy to help in office hours.

Write all responses in your notes since you'll be comparing them with the re-engage later.

First, in your notes, identify whether $AB = BA$ and name this algebraic operation too.

When you are finished, type algebraic in the box

Next, identify whether $(AB)C = A(BC)$ and name this algebraic operation too.

When you are finished, type operation in the box

Check

Question **2**

Not complete

Points out of 4.00

Assume D is invertible. Apply the inverse to both sides of $D\vec{x} = \vec{b}$. Name and show all the algebraic steps as you reduce. Write in your notes.

When you are finished, type invertible in the box

What does the above *directly* show us (i.e. from related definitions rather than any theorems)? Write in your notes.

When you are finished, type directly in the box

How about *indirectly*, what else can we say? Write in your notes.

When you are finished, type theorem in the box

How many total algebraic steps are needed to reduce $D\vec{x} = \vec{b}$? Write in your notes.

When you are finished, type steps in the box

Check

Question **3**

Not complete

Points out of 3.00

Given the matrix $\begin{bmatrix} 4 & -2 \\ -2 & 3 \end{bmatrix}$, we'll look at a number of computations.

By hand, use matrix multiplication to compute $\begin{bmatrix} -1 & 3 \\ 2 & 4 \\ 5 & -3 \end{bmatrix} \begin{bmatrix} 4 & -2 \\ -2 & 3 \end{bmatrix}$ in your notes and show work, but no need to reduce.

When you are finished, type multiply in the box

Next, by hand, compute the inverse of $\begin{bmatrix} 4 & -2 \\ -2 & 3 \end{bmatrix}$ in your notes and show work, but no need to reduce.

When you are finished, type inverse in the box

Lastly, by hand, compute the transpose of $\begin{bmatrix} 4 & -2 \\ -2 & 3 \end{bmatrix}$ in your notes and show work, but no need to reduce.

When you are finished, type transpose in the box

Check

Question **4**

Not complete

Points out of 1.00

What elementary row operation does multiplying on the left by $\begin{bmatrix} 1 & 0 \\ -2 & 1 \end{bmatrix}$ represent? Write in your notes.

When you are finished, type elementary in the box

Check

Question **5**

Not complete

Points out of 1.00

What is the difference between a basis for a space and the entire space---e.g., a basis for the null space versus the entire null space or a basis for the column space versus the entire column space? Write in your notes.

When you are finished, type basis in the box

Check

Question **6**

Not complete

Points out of 4.00

Assume that $\begin{bmatrix} 3 & 3 & 1 & 0 \\ 2 & 11 & 1 & 0 \\ 5 & 14 & 2 & 0 \end{bmatrix}$ reduces to $\begin{bmatrix} 3 & 3 & 1 & 0 \\ 0 & 9 & \frac{1}{3} & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ using strict Gaussian.

In your notes, show work as you write the algebraic null space of $\begin{bmatrix} 3 & 3 & 1 \\ 2 & 11 & 1 \\ 5 & 14 & 2 \end{bmatrix}$.

When you are finished, type null space in the box

Next, write a basis for the null space of $\begin{bmatrix} 3 & 3 & 1 \\ 2 & 11 & 1 \\ 5 & 14 & 2 \end{bmatrix}$ in your notes.

When you are finished, type basis in the box

Now annotate in your notes what is the geometry of the null space of $\begin{bmatrix} 3 & 3 & 1 \\ 2 & 11 & 1 \\ 5 & 14 & 2 \end{bmatrix}$?

When you are finished, type geometry in the box

Switching spaces, is $\left\{ \begin{bmatrix} 3 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 9 \\ 0 \end{bmatrix} \right\}$ a basis for the column space of $\begin{bmatrix} 3 & 3 & 1 \\ 2 & 11 & 1 \\ 5 & 14 & 2 \end{bmatrix}$? Respond why or why not in your notes.

When you are finished, type column space in the box

Lastly, what does the rank-nullity theorem tell us in general and in this example? Respond in your notes.

When you are finished, type theorem in the box

Check