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when you click show answers show i display all answers once or hover then display

To solve the system of equations using Gaussian elimination and Gauss-Jordan reduction, let's follow the steps:

Given System of Equations:

$$\begin{array}{l} x + y + z = 2 \\ x + 3y + 3z = 0 \\ x + 3y + 6z = 3 \end{array}$$

(a) Gaussian Elimination to Row Echelon Form

1. Augmented Matrix:

$$\left[\begin{array}{cccc} 1 & 1 & 1 & 2 \\ 1 & 3 & 3 & 0 \\ 1 & 3 & 6 & 3 \end{array} \right]$$

2. Row Operations:

- Subtract Row 1 from Row 2 and Row 3:

$$\left[\begin{array}{cccc} 1 & 1 & 1 & 2 \\ 0 & 2 & 2 & -2 \\ 0 & 2 & 5 & 1 \end{array} \right]$$

- Subtract Row 2 from Row 3:

$$\left[\begin{array}{cccc} 1 & 1 & 1 & 2 \\ 0 & 2 & 2 & -2 \\ 0 & 0 & 3 & 3 \end{array} \right]$$

- Divide Row 2 by 2 and Row 3 by 3:

$$\left[\begin{array}{cccc} 1 & 1 & 1 & 2 \\ 0 & 1 & 1 & -1 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

Result:

$$\left[\begin{array}{cccc} 1 & 1 & 1 & 2 \\ 0 & 1 & 1 & -1 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

where $a=2$, $b=-1$, and $c=1$.

(b) Gauss-Jordan Reduction to Reduced Row Echelon Form

1. Continue from Row Echelon Form:

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

2. Row Operations:

- Subtract Row 3 from Row 2:

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

- Subtract Row 2 and Row 3 from Row 1:

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

Result:

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

where $d=3$, $e=-2$, and $f=1$.

(c) Solution of the System

From the reduced row echelon form:

$$x = 3, \quad y = -2, \quad z = 1$$

Final Answers:

- $a=2$, $b=-1$, $c=1$
- $d=3$, $e=-2$, $f=1$
- $x=3$, $y=-2$, $z=1$

You can display all answers at once when "Show Answer" is clicked.

am asking for design solution not the math problem

Ah, I see! You're asking about the **design solution** for how to display the answers when the user interacts with the "Show Answer" button. Here's a design approach:

Design Solution for Displaying Answers

Option 1: Display All Answers at Once

- **Interaction:** When the user clicks the "Show Answer" button, all the answers (for parts a, b, and c) are displayed simultaneously.
- **Design:**
 - Use a collapsible section or a modal that expands to reveal all the answers.
 - Answers can be grouped in a clean, readable format (e.g., bullet points or a table).
 - Example:

Show Answer ▼

- (a) $a = 2$, $b = -1$, $c = 1$

- (b) $d = 3$, $e = -2$, $f = 1$

- (c) $x = 3$, $y = -2$, $z = 1$

Option 2: Hover to Display Answers

- **Interaction:** When the user hovers over the "Show Answer" button or specific parts of the question, the corresponding answers are displayed.
- **Design:**
 - Use tooltips or hover-triggered pop-ups to show answers for each part (a, b, c) individually.
 - Example:
 - Hover over "Show Answer for (a)" → Displays: $a=2$, $b=-1$, $c=1$.
 - Hover over "Show Answer for (b)" → Displays: $d=3$, $e=-2$, $f=1$.
 - Hover over "Show Answer for (c)" → Displays: $x=3$, $y=-2$, $z=1$.

Option 3: Progressive Reveal (Step-by-Step)

- **Interaction:** The user clicks "Show Answer" for each part (a, b, c) individually, and the answers are revealed step-by-step.
- **Design:**
 - Each part (a, b, c) has its own "Show Answer" button.
 - Clicking a button reveals only the answer for that specific part.
 - Example:

(a) Show Answer ▼

$a = 2$, $b = -1$, $c = 1$

(b) Show Answer ▼

$d = 3$, $e = -2$, $f = 1$

(c) Show Answer ▼

$x = 3$, $y = -2$, $z = 1$

Option 4: Toggle Visibility

- **Interaction:** The user clicks "Show Answer" to toggle the visibility of all answers.
- **Design:**
 - Answers are hidden by default.
 - Clicking "Show Answer" reveals all answers, and clicking it again hides them.
 - Example:

Show Answer ▼

- (a) $a = 2$, $b = -1$, $c = 1$
- (b) $d = 3$, $e = -2$, $f = 1$
- (c) $x = 3$, $y = -2$, $z = 1$

Recommended Design

- **For Simplicity:** Use **Option 1 (Display All Answers at Once)**. It's straightforward and ensures the user gets all the information in one interaction.
- **For Interactivity:** Use **Option 3 (Progressive Reveal)** if you want to guide the user through the solution step-by-step.
- **For Minimalism:** Use **Option 4 (Toggle Visibility)** to keep the interface clean while allowing the user to control when they see the answers.

Let me know if you'd like a mockup or further details on implementing any of these designs!

the options i had are add of the answers on there rightful places in the blank or hover to display answer on that blank to get a context of whats happening here is the draft mode version of the the cell i showed you as you can see it removes the answers in the blank spaces when you publish the cells

Thank you for clarifying! Based on your description, it seems you're working with an interactive system where users can either **fill in the blanks** with the correct answers or **hover to display the answers** in the blank spaces. Here's how you can design this interaction effectively:

Design Solution for Interactive Blanks

Option 1: Fill in the Blanks

- **Interaction:** Users manually type the answers into the blank spaces.
 - **Design:**
 - Blank spaces are represented as input fields (text boxes).
 - After filling in the answers, users can submit their responses for validation.
 - Example:
- (a) $a =$ [input field], $b =$ [input field], $c =$ [input field]

- (b) d = [input field], e = [input field], f = [input field]
(c) x = [input field], y = [input field], z = [input field]

Option 2: Hover to Display Answers

- **Interaction:** Users hover over the blank spaces to see the correct answers.

- **Design:**

- Blank spaces are underlined or highlighted to indicate interactivity.
- On hover, a tooltip or pop-up displays the correct answer.

- **Example:**

- (a) a = _____ (hover to see answer: 2), b = _____ (hover to see answer: -1), c = _____ (hover to see answer: 1)
(b) d = _____ (hover to see answer: 3), e = _____ (hover to see answer: -2), f = _____ (hover to see answer: 1)
(c) x = _____ (hover to see answer: 3), y = _____ (hover to see answer: -2), z = _____ (hover to see answer: 1)

Option 3: Toggle Visibility (Show/Hide Answers)

- **Interaction:** Users click a button to toggle the visibility of all answers in the blank spaces.

- **Design:**

- Blank spaces are initially empty.
- A "Show Answers" button reveals the correct answers in the blanks.
- **Example:**

Show Answers ▼

- (a) a = 2, b = -1, c = 1
(b) d = 3, e = -2, f = 1
(c) x = 3, y = -2, z = 1

Recommended Design

- **For Learning and Practice:** Use **Option 1 (Fill in the Blanks)**. This encourages active participation and helps users test their understanding.
- **For Quick Reference:** Use **Option 2 (Hover to Display Answers)**. This is ideal for users who want to check their work or get hints without disrupting the flow.
- **For Clean Presentation:** Use **Option 3 (Toggle Visibility)**. This keeps the interface uncluttered while allowing users to access answers when needed.

Implementation Example

Here's how the **hover-to-display** design could look in your draft mode:

Draft Mode (Blanks Empty)

(a) $a = \underline{\hspace{2cm}}$, $b = \underline{\hspace{2cm}}$, $c = \underline{\hspace{2cm}}$

(b) $d = \underline{\hspace{2cm}}$, $e = \underline{\hspace{2cm}}$, $f = \underline{\hspace{2cm}}$

(c) $x = \underline{\hspace{2cm}}$, $y = \underline{\hspace{2cm}}$, $z = \underline{\hspace{2cm}}$

Published Mode (Hover to Display)

(a) $a = \underline{\hspace{2cm}}$ (hover to see answer: 2), $b = \underline{\hspace{2cm}}$ (hover to see answer: -1), $c = \underline{\hspace{2cm}}$ (hover to see answer: 1)

(b) $d = \underline{\hspace{2cm}}$ (hover to see answer: 3), $e = \underline{\hspace{2cm}}$ (hover to see answer: -2), $f = \underline{\hspace{2cm}}$ (hover to see answer: 1)

(c) $x = \underline{\hspace{2cm}}$ (hover to see answer: 3), $y = \underline{\hspace{2cm}}$ (hover to see answer: -2), $z = \underline{\hspace{2cm}}$ (hover to see answer: 1)

Let me know if you'd like further assistance with implementing this design!

am going to go with shows answers btn reveals all the answers in the cell just for speed

Great choice! Using a **"Show Answers" button** to reveal all the answers in the cell is a clean and efficient solution. Here's how you can implement it:

Implementation of "Show Answers" Button

1. Draft Mode (Blanks Empty)

In draft mode, the cell will display the questions with blank spaces, and the answers will be hidden. For example:

Q.3.

Consider the following system of equations:

$$\begin{cases} x + y + z = 2 \\ x + 3y + 3z = 0 \\ x + 3y + 6z = 3 \end{cases}$$

(a) Use Gaussian elimination to put the augmented coefficient matrix into row echelon form. The result will be

$$\begin{bmatrix} 1 & \quad 1 & \quad 1 & \quad a \\ 0 & \quad 1 & \quad b & \quad c \\ 0 & \quad 0 & \quad 1 & \quad c \end{bmatrix}$$

where $(a = \underline{\hspace{2cm}})$, $(b = \underline{\hspace{2cm}})$, and $(c = \underline{\hspace{2cm}})$.

(b) Use Gauss-Jordan reduction to put the augmented coefficient matrix in reduced row echelon form. The result will be

$$\begin{bmatrix} 1 & \quad 0 & \quad 0 & \quad d \\ 0 & \quad 1 & \quad 0 & \quad e \\ 0 & \quad 0 & \quad 1 & \quad f \end{bmatrix}$$

where $d =$ _____, $e =$ _____, and $f =$ _____.

(c) The solution of (*) are $x =$ _____, $y =$ _____, and $z =$ _____.

[Show Answers]

2. Published Mode (Button Reveals Answers)

When the user clicks the **"Show Answers" button**, all the answers are revealed in their respective blank spaces. For example:

Q.3.

Consider the following system of equations:

$$\begin{cases} x + y + z = 2 \\ x + 3y + 3z = 0 \\ x + 3y + 6z = 3 \end{cases}$$

(a) Use Gaussian elimination to put the augmented coefficient matrix into row echelon form. The result will be

$$\begin{bmatrix} 1 & 1 & 1 & a \\ 0 & 1 & b & c \\ 0 & 0 & 1 & c \end{bmatrix}$$

where $a = 2$, $b = -1$, and $c = 1$.

(b) Use Gauss-Jordan reduction to put the augmented coefficient matrix in reduced row echelon form. The result will be

$$\begin{bmatrix} 1 & 0 & 0 & d \\ 0 & 1 & 0 & e \\ 0 & 0 & 1 & f \end{bmatrix}$$

where $d = 3$, $e = -2$, and $f = 1$.

(c) The solution of (*) are $x = 3$, $y = -2$, and $z = 1$.

[Hide Answers]

How It Works

1. **Button Placement:** Add a **"Show Answers" button** at the bottom of the cell.

2. **Toggle Functionality:**

- When the button is clicked, it reveals all the answers in the blank spaces.
- The button text changes to **"Hide Answers"** to allow users to toggle the visibility of the answers.

3. **Styling:**

- Use a simple button style (e.g., a bordered button with a hover effect).
- Ensure the answers are clearly visible when revealed (e.g., bold or highlighted text).

Example Code (HTML + JavaScript)

If you're implementing this on a web page, here's a simple example:

```
<div id="question-cell">
  <p>Q.3.</p>
  <p>Consider the following system of equations:</p>
  <p>\[ \begin{cases}
x + y + z = 2 \\
x + 3y + 3z = 0 \\
x + 3y + 6z = 3
\end{cases} \]</p>

  <p>(a) Use Gaussian elimination to put the augmented coefficient matrix into row echelon form. The result will be</p>
  <p>\[ \begin{array}{ccc|c}
1 & \text{quad} & 1 & \text{quad} & a \\
0 & \text{quad} & 1 & \text{quad} & b \\
0 & \text{quad} & 0 & \text{quad} & c
\end{array} \]</p>
  <p>where \(( a = \) <span class="answer">2</span>, \(( b = \) <span class="answer">-1</span>, and \(( c = \) <span class="answer">1</span>.</p>

  <p>(b) Use Gauss-Jordan reduction to put the augmented coefficient matrix in reduced row echelon form. The result will be</p>
  <p>\[ \begin{array}{ccc|c}
1 & \text{quad} & 0 & \text{quad} & d \\
0 & \text{quad} & 1 & \text{quad} & e \\
0 & \text{quad} & 0 & \text{quad} & f
\end{array} \]</p>
  <p>where \(( d = \) <span class="answer">3</span>, \(( e = \) <span class="answer">-2</span>, and \(( f = \) <span class="answer">1</span>.</p>

  <p>(c) The solution of (*) are \(( x = \) <span class="answer">3</span>, \(( y = \) <span class="answer">-2</span>, and \(( z = \) <span class="answer">1</span>.</p>

  <button onclick="toggleAnswers()">Show Answers</button>
</div>

<script>
function toggleAnswers() {
  const answers = document.querySelectorAll('.answer');
  const button = document.querySelector('button');

  answers.forEach(answer => {
    if (answer.style.display === 'none' || answer.style.display === '') {
      answer.style.display = 'inline';
      button.textContent = 'Hide Answers';
    } else {
      answer.style.display = 'none';
      button.textContent = 'Show Answers';
    }
  });
}
</script>
```

Key Features

- **Simplicity:** Users can quickly reveal or hide all answers with a single click.
- **Clean Design:** The interface remains uncluttered until the user chooses to see the answers.
- **Flexibility:** You can easily adapt this design for other questions or cells.

Let me know if you need further assistance with the implementation! ☐