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Homework 6.2.2.1

1/1 point (graded)

Practice reducing a system of linear equations expressed as an appended system to an upper triangular system of linear equations by visiting the "Practice with Gaussian Elimination" webpage we created for you. For now, only work with the top two parts of that webpage.

Problem 2 in that webpage starts with the appended matrix

$$\left[\begin{array}{ccc|c} 1 & 1 & 2 & -1 \\ -3 & 0 & -3 & -3 \\ 1 & 13 & 20 & -37 \end{array}\right]$$

Which of the following corresponds to the appended matrix as it is after Step 1?

- $\left[\begin{array}{ccc|c} 1 & 1 & 2 & -1 \\ 0 & 3 & 3 & -6 \\ 0 & 0 & 6 & -12 \end{array}\right]$
- $\left[\begin{array}{ccc|c} 1 & 1 & 2 & -1 \\ 3 & 0 & -3 & -3 \\ 0 & 3 & 2 & -3 \end{array}\right]$
- $\left[\begin{array}{ccc|c} 1 & 1 & 2 & -1 \\ 0 & 3 & 3 & -6 \\ 0 & 12 & 18 & -36 \end{array}\right]$ ✔

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Answers are displayed within the problem

Homework 6.2.2.2

3/3 points (graded)

Compute the solution to the linear system of equations expressed as an appended matrix given by

$$\left(\begin{array}{rrr|r} -1 & 2 & -3 & 2 \\ -2 & 2 & -8 & 10 \\ 2 & -6 & 6 & -2 \end{array}\right)$$

$$\begin{pmatrix} \chi_0 \\ \chi_1 \\ \chi_2 \end{pmatrix} =$$

2 ✔ **Answer:** 2

-1 ✔ **Answer:** -1

-2 ✔ **Answer:** -2

Answer:

$$\left(\begin{array}{rrr|r} -1 & 2 & -3 & 2 \\ -2 & 2 & -8 & 10 \\ 2 & -6 & 6 & -2 \end{array}\right) \rightarrow \left(\begin{array}{rrr|r} -1 & 2 & -3 & 2 \\ 0 & -2 & -2 & 6 \\ 0 & -2 & 0 & 2 \end{array}\right) \rightarrow$$

$$\left(\begin{array}{rrr|r} -1 & 2 & -3 & 2 \\ 0 & -2 & -2 & 6 \\ 0 & 0 & 2 & -4 \end{array}\right) \rightarrow \begin{cases} 2\chi_2 = -4 & \Rightarrow \ \chi_2 = -2 \\ -2\chi_1 - (2)(-2) = 6 & \Rightarrow \ \chi_1 = -1 \\ -\chi_0 + (2)(-1) + (-3)(-2) = 2 & \Rightarrow \ \chi_0 = 2 \end{cases}$$