

X

Question 1 / 3

1 point

Which of the following sets of vectors form a basis for the null space of

$$\begin{pmatrix} 1 & 2 & 0 & 1 \\ 2 & 4 & 1 & 1 \\ 3 & 6 & 1 & 1 \end{pmatrix}$$

☐ $\left\{ \begin{pmatrix} -2 \\ 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 4 \\ -2 \\ 0 \\ 0 \end{pmatrix} \right\}$

☐ $\left\{ \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \right\}$

☐ $\left\{ \begin{pmatrix} 0 \\ 0 \\ -3 \\ 2 \end{pmatrix} \right\}$

☒ $\left\{ \begin{pmatrix} -2 \\ 1 \\ 0 \\ 0 \end{pmatrix} \right\}$

NEXT

>

$$\begin{pmatrix} 1 & 2 & 0 & 1 \\ 2 & 4 & 1 & 1 \\ 3 & 6 & 1 & 1 \end{pmatrix} \rightarrow \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & -1 & 2 \end{bmatrix} \xrightarrow{\text{rref}} \begin{bmatrix} 1 & 2 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 & 0 & 1 & | & 0 \\ 0 & 0 & -1 & -1 & | & 0 \\ 0 & 0 & 0 & 1 & | & 0 \end{bmatrix} \quad \begin{array}{l} x_1 + 2x_3 + x_4 = 0 \\ x_3 - x_4 = 0 \\ x_4 = 0 \end{array}$$

$$x_1, x_2, x_3, x_4 = 0$$

$$\begin{array}{l} x_4 = 0 \\ x_3 = x_4 = 0 \\ x_2 = \frac{-x_4 - x_1}{2} = -\frac{1}{2}x_1 \\ x_1 = -2x_2 \end{array}$$

Set x_2 to 1 as one option

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