Course Name: Linear Algebra Professor/Teacher:

Title of Homework:

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Quiz 3

Find a basis of span{(1,2,-1,0,-1), (0,0,0,1,1), (2,4,1,1,1)}

using column space algorithm

derive a 5×3 matrix A

$$A=\begin{bmatrix}1&0&2\\2&0&4\\-1&0&1\\0&1&1\\-1&1&1\end{bmatrix}\xrightarrow{\substack{E_{21}(-2)\\E_{31}(1)\\E_{51}(1)}}\begin{bmatrix}1&0&2\\0&0&0\\0&0&3\\1&1&3\\0&1&3\end{bmatrix}\xrightarrow{\substack{E_{41}(-1)\\E_3(\frac{1}{3})}}\begin{bmatrix}1&0&2\\0&0&0\\0&0&1\\0&1&1\\0&1&3\end{bmatrix}$$

$$\xrightarrow{\substack{E_{43}(-1)\\E_{54}(-1)\\E_{53}(-3)}}\begin{bmatrix}1&0&2\\0&0&0\\0&0&1\\0&0&0\\0&0&0\end{bmatrix}\xrightarrow{\substack{E_{24}\\E_{13}(-2)}}\begin{bmatrix}1&0&0\\0&1&0\\0&0&1\\0&0&0\\0&0&0\end{bmatrix}$$

So (1,2,-1,0,-1), (0,0,0,1,1), (2,4,1,1,1) is basis