



Practice: Reduced Row Echelon Form

Put the following matrices into reduced row echelon form and state which columns are pivot columns:

(a)

$$A = \begin{pmatrix} 3 & -7 & -2 & -7 \\ -3 & 5 & 1 & 5 \\ 6 & -4 & 0 & 2 \end{pmatrix}$$

(b)

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

Next Item >

(a)

pivot

$$A = \begin{pmatrix} 3 & -7 & -2 & -7 \\ -3 & 5 & 1 & 5 \\ 6 & -4 & 0 & 2 \end{pmatrix}$$

pivots

$$A = \begin{pmatrix} 3 & -7 & -2 & -7 \\ 0 & -2 & -1 & -2 \\ 0 & 10 & 4 & 16 \end{pmatrix}$$

zero out

$$\begin{pmatrix} 3 & -7 & -2 & -7 \\ 0 & -2 & -1 & -2 \\ 0 & 0 & -1 & 6 \end{pmatrix}$$

$\times 3$
add

$$\begin{pmatrix} 3 & 0 & -5 & 5 \\ 0 & -2 & -1 & -2 \\ 0 & 0 & -1 & 6 \end{pmatrix}$$

pivots
to 1

$$\begin{pmatrix} 2 & 0 & 0 & 6 \\ 0 & -2 & 0 & -8 \\ 0 & 0 & -1 & 6 \end{pmatrix}$$

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

(b)

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

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$$\begin{pmatrix} 1 & 2 & 1 \\ 0 & 0 & 1 \\ \text{same} \end{pmatrix}$$