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Math 33A Third Quiz (Week 4)

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SECTION: Cross one box below

Day \ T.A.	Bon-Soon	David	Robert
Tuesday	2A	2C	2E
Thursday	2B	2D	~~2F~~

Instructions:
Solve the problem
You have 5 minutes
Use a pen to record your final answer

Problem 1. Find a basis for the image of the following matrix $A = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 0 & 7 \\ 0 & 0 & 5 \\ 1 & 2 & 1 \end{bmatrix}$

Calculate ref.

$$A = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 0 & 7 \\ 0 & 0 & 5 \\ 1 & 2 & 1 \end{bmatrix} \xrightarrow{-R_1} \begin{bmatrix} 1 & 2 & 1 \\ 0 & 0 & 7 \\ 0 & 0 & 5 \\ 0 & 0 & 0 \end{bmatrix} \xrightarrow{\frac{R_2}{7}} \begin{bmatrix} 1 & 2 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 5 \\ 0 & 0 & 0 \end{bmatrix} \xrightarrow{\substack{-\frac{1}{5}R_2 \\ -5R_2}} \begin{bmatrix} 1 & 2 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

★ columns have pivots. Corresponding columns in A form basis.

$\therefore \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \begin{bmatrix} 1 \\ 7 \\ 5 \\ 1 \end{bmatrix}$ form the basis of the image of A