SATISH KUMAR

Exercise 1

$$A = \begin{pmatrix} 1 & 2 & 4 \\ 3 & 5 & c \\ a & a & b \end{pmatrix}$$

Multiply row 1 by -3 and add row 2

$$\begin{pmatrix} 1 & 2 & 4 \\ 0 & -1 & c-12 \\ a & a & b \end{pmatrix}$$

Multiply row 1 by $-a$ and add row 3

$$\begin{pmatrix} 1 & 2 & 4 \\ 0 & -1 & c-12 \\ 0 & 0 & b-4a \\ & & 8a+b-ac \end{pmatrix}$$

Multiply row 2 by $-a$ and add row 3

$$\begin{pmatrix} 1 & 2 & 4 \\ 0 & -1 & c-12 \\ 0 & 0 & 8a+b-ac \end{pmatrix}$$

$$\det A = 1 \cdot -1 \cdot 8a+b-ac$$

$$= ac-8a-b$$

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

Multiply row 1 by -2 and add row 2

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

Multiply row 3 by -2 and add row 4

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

Multiply row 2 by -2 and add row 3

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

Multiply row 3 by $\frac{5}{6}$ and add row 4

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

$\det B = 1 \cdot 1 \cdot 6 \cdot -5$

$= -30$ Ans