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MM 25

Determinants

Time 1 hour

CherrySection A 1 Mark Each

Paper prepared by

Dev Anoop

Mathematics Teacher

Bathinda

Email: devanoop@devanoop.com

1. If $\begin{vmatrix} x+2 & 3 \\ x+5 & 4 \end{vmatrix} = 3$, Find the value of x.

2. Find the value (s) of p, such that the area of the triangle with vertices (5, 4), (-2, 6) and (p, 4) is 35 square units.

3. Find the cofactor of a_{12} in the following: $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$

Section B 4 Marks Each

4. Prove that $\begin{vmatrix} x+a & b & c \\ a & x+b & c \\ a & b & x+c \end{vmatrix} = x^2(x+a+b+c)$

5. Using properties of determinants, Show that: $\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ca \\ 1 & c & c^2 - ab \end{vmatrix} = 0$

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6. If $A = \begin{bmatrix} 3 & 2 \\ 7 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 6 & 7 \\ 8 & 9 \end{bmatrix}$ verify that $(AB)^{-1} = B^{-1}A^{-1}$

7. If $f(x) = \begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$ Show that $\{f(x)\}^{-1} = f(-x)$.

Section C 6 Marks Each

10. solve using matrices: $\frac{2}{a} + \frac{3}{b} + \frac{10}{c} = 4$; $\frac{4}{a} - \frac{6}{b} + \frac{5}{c} = 1$, $\frac{6}{a} + \frac{9}{b} - \frac{20}{c} = 2$.

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