2015-16
MODERN PUBLIC SCHOOL
HOLIDAY HOME WORK
CLASS - XII MATHS

KENT
PAGE NO.
DATE : / /

Q1 If $\begin{bmatrix} x-y & z \\ 2x-y & w \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 0 & 5 \end{bmatrix}$ find the value of $x+y$

Q2 If $\tan^{-1}\left(\frac{x-2}{x-4}\right) + \tan^{-1}\left(\frac{x+2}{x+4}\right) = \frac{\pi}{4}$ find the value of x

Q3 Using Properties Prove that $\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3$

Q4 Using matrices, solve $x+y-z=3$
$2x+3y+z=10$
$3x-y-7z=1$

Q5 For what value of k, the matrix $\begin{bmatrix} 2k+3 & 4 & 5 \\ -4 & 0 & -6 \\ -5 & 6 & -2k-3 \end{bmatrix}$ is skew Symmetric

Q4 If $\begin{vmatrix} \sin\alpha & \cos\beta \\ \cos\alpha & \sin\beta \end{vmatrix} = \frac{1}{2}$ where α and β are acute angles, then write the value of $\alpha+\beta$

Q5 Prove that $\cot^{-1}7 + \cot^{-1}8 + \cot^{-1}18 = \cot^{-1}3$

Q6 Write the principal value of $\tan^{-1}(1) + \cos^{-1}(-\frac{1}{2})$

Q7 Using properties of determinants prove that

$$\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1-x^3)^2$$

KENT

PAGE NO.

DATE : / /

Q8 Show that $\tan\left(\frac{1}{2}\sin^{-1}\frac{3}{4}\right) = \frac{4-\sqrt{7}}{3}$

Q9 If A is a square matrix of order 3 such that $|\text{Adj } A| = 225$ Find $|A'|$

Q10 Using elementry transformation find the inverse of the following matrix

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -1 & -4 & -5 \end{bmatrix}$$

Q11 If $A^{-1} = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$ Find $(AB)^{-1}$

Q12 Using properties of determinent prove that

$$\begin{vmatrix} b+c & a-b & a \\ c+a & b-c & b \\ a+b & c-a & c \end{vmatrix} = 3abc - a^3 - b^3 - c^3$$

Q13 If A is a square matrix of order 3 and $|3A| = K|A|$ then write the value of K

Q14 Show that $\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = 9b^2(a+b)$

Q15 Express the following matrix as the sum of a symmetric and skew-symmetric matrix and verify your result.

$$\begin{bmatrix} 3 & -2 & -4 \\ 3 & -2 & -5 \\ -1 & 1 & 2 \end{bmatrix}$$

Pratishtha