1

1                              $a_{32}a_{55}a_{14}a_{21}a_{43}$ _____

2   n $n^2 - n$

      _____

3       $\alpha, \beta, \gamma,$ $x^2 + px + q = 0$

$$\begin{vmatrix} \alpha & \beta & \gamma \\ \gamma & \alpha & \beta \\ \beta & \gamma & \alpha \end{vmatrix} = \underline{\qquad}$$

4                 $D = \begin{vmatrix} k & 2 & 3 \\ -1 & k & 0 \\ 0 & k & 1 \end{vmatrix} = 0$ k= _____

5        $D = \begin{vmatrix} 1 & 1 & 1 \\ 3 & 6 & 9 \\ 9 & 36 & 81 \end{vmatrix}$,   D   = _____

2

1             $\begin{vmatrix} k & 2 & 1 \\ 2 & k & 1 \\ k & 1 & 2 \end{vmatrix} = 0$ A.   k=0,   B. k=1,   C. k=2, D. k=3

2               $\begin{vmatrix} a_1 & 0 & 0 & b_1 \\ 0 & a_2 & b_2 & 0 \\ 0 & b_3 & a_3 & 0 \\ b_4 & 0 & 0 & a_4 \end{vmatrix} = $

(A). $a_1 a_2 a_3 a_4 - b_1 b_2 b_3 b_4$ (B). $a_1 a_2 a_3 a_4 + b_1 b_2 b_3 b_4$

(C). $(a_1 a_2 - b_1 b_2)(a_3 a_4 - b_3 b_4)$ (D) $(a_2 a_3 - b_2 b_3)(a_1 a_4 - b_1 b_4)$

3   . $f(x) = \begin{vmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ 1 & -1 & 1 & -1 \\ x & -1 & -1 & 1 \end{vmatrix}$ $f(x) = 0$

      A   0,   (B)   -1,   (C)   –2,   (D)   -3

(4) $\quad D = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ $\quad D_1 = \begin{vmatrix} 2a_{11} & 2a_{12} & 2a_{13} \\ 2a_{21} & 2a_{22} & 2a_{23} \\ 2a_{31} & 2a_{32} & 2a_{33} \end{vmatrix}$ $\quad D_1 =$

(A) 2D,   (B) –2D   (C) 8D   (D) –8D

(5) $\quad D = \begin{vmatrix} 1 & 0 & 1 & 2 \\ -1 & 1 & 0 & 3 \\ 1 & 1 & 1 & 0 \\ -1 & 2 & 5 & 4 \end{vmatrix}$ $\quad D =$

(A) $\; A_{31} + A_{32} + A_{33} + A_{34}$

(B) $\; -A_{31} + 2A_{32} + 5A_{33} + 4A_{34}$

(C) $\; A_{13} + A_{33} + 5A_{43}$

(D) $\; (-1)^{1+4} M_{14} + (-1)^{2+4} M_{24} + (-1)^{3+4} M_{34} + (-1)^{4+4} M_{44}$

3.

$1 \quad \begin{vmatrix} a_{11} + b_{11} & a_{12} + b_{12} \\ a_{21} + b_{21} & a_{22} + b_{22} \end{vmatrix} = \begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix} + \begin{vmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{vmatrix}$

$(2) \quad \begin{vmatrix} o & 0 & 0 & 1 \\ a & b & c & 0 \\ a^2 & b^2 & c^2 & 0 \\ a^3 & b^3 & c^3 & 0 \end{vmatrix} = abc \begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix}$

$(3) \quad \begin{vmatrix} a & a & 1 \\ a & 1 & 0 \\ 1 & 0 & 0 \end{vmatrix} = 1$

$(4) \quad \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} = \begin{vmatrix} a_1 & a_2 & a_3 \\ 2b_1 - a_1 & 2b_2 - a_2 & 2b_3 - a_3 \\ c_1 & c_2 & c_3 \end{vmatrix}$

4.

$1 \quad D = \begin{vmatrix} 5x & 1 & 2 & 3 \\ x & x & 1 & 2 \\ 1 & 2 & x & 3 \\ x & 1 & 2 & 2x \end{vmatrix}$ $\qquad\qquad 2 \quad \begin{vmatrix} 7 & 5 & 6 & 6 \\ 4 & 0 & 0 & 0 \\ 8 & 0 & 3 & 0 \\ 1 & 2 & 7 & 0 \end{vmatrix}$

$$3 \quad \begin{vmatrix} 1 & 2 & 3 \\ 99 & 201 & 298 \\ 4 & 5 & 6 \end{vmatrix}$$

$$4 \quad \begin{vmatrix} 0 & -1 & -1 & -1 \\ 1 & 0 & -1 & -1 \\ 1 & 1 & 0 & -1 \\ 1 & 1 & 1 & 0 \end{vmatrix}$$

$$5 \quad \begin{vmatrix} 1-a & a & 0 & 0 & 0 \\ -1 & 1-a & a & 0 & 0 \\ 0 & -1 & 1-a & a & 0 \\ 0 & 0 & -1 & 1-a & a \\ 0 & 0 & 0 & -1 & 1-a \end{vmatrix}$$

$$5 \quad \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix} = 2$$

$$1 \quad \begin{vmatrix} 2a_{11} & a_{21}-3a_{11} & a_{21}-a_{31} \\ 2a_{12} & a_{22}-3a_{12} & a_{22}-a_{32} \\ 2a_{13} & a_{23}-3a_{13} & a_{23}-a_{33} \end{vmatrix}$$

$$2 \quad \begin{vmatrix} 0 & 0 & 0 & 4 \\ a_{11} & a_{21} & a_{31} & 1 \\ a_{12} & a_{22} & a_{32} & 1 \\ a_{13} & a_{23} & a_{33} & 1 \end{vmatrix}$$

6   n

$$D_n = \begin{vmatrix} 1 & 1 & \cdots & 1 \\ x_1 & x_2 & \cdots & x_n \\ x_1^2 & x_2^2 & \cdots & x_n^2 \\ \cdots & \cdots & \cdots & \cdots \\ x_1^{n-1} & x_2^{n-1} & \cdots & x_n^{n-1} \\ x_1^n & x_2^n & \cdots & x_n^n \end{vmatrix}$$

7   λ

$$1 \quad \begin{cases} 3x_1 + 2x_2 - x_3 = 0 \\ \lambda x_1 + 7x_2 - 2x_3 = 0 \\ 2x_1 - x_2 + 3x_3 = 0 \end{cases}$$

$$2 \quad \begin{cases} 2x_1 + \lambda x_2 + 3x_3 = 0 \\ \lambda x_1 - x_2 - 4x_3 = 0 \\ 4x_1 + x_2 - x_3 = 0 \end{cases}$$