**ASSIGNMENT NO.- 2[Ch-4 (Determinants)]**

**Class -XII**

1. Evaluate $\left|\begin{matrix}\sin(30^{0})&\cos(30^{0})\\-\sin(60^{0})&\cos(60^{0})\end{matrix}\right|$.

2. Find the value of $x$ if $\left|\begin{matrix}2&4\\5&1\end{matrix}\right|=\left|\begin{matrix}2x&4\\6&x\end{matrix}\right|.$

3. State whether the following statement is true or false: The determinant

 $∆=\left|\begin{matrix}\cos((x+y))&-\sin((x-y))&\cos(2y)\\\sin(x)&\cos(x)&\sin(y)\\-\cos(x)&\sin(x)&\cos(y)\end{matrix}\right|$ is independent of $x$ only.

4. Show that $\left|\begin{matrix}-a^{2}&ba&ac\\ba&-b^{2}&bc\\ac&bc&-c^{2}\end{matrix}\right|=4a^{2}b^{2}c^{2}$

5. Using properties of determinants ,prove that $\left|\begin{matrix}a&b&c\\a-b&b-c&c-a\\b+c&c+a&a+b\end{matrix}\right|=a^{3}+b^{3}+c^{3}-3abc$

6. Using properties,prove that $\left|\begin{matrix}1&a^{2}+bc&a^{3}\\1&b^{2}+ca&b^{3}\\1&c^{2}+ab&c^{3}\end{matrix}\right|=-(a-b)(b-c)(c-a)(a^{2}+b^{2}+c^{2})$

7. Prove that the determinant $\left|\begin{matrix}x&\sin(θ)&\cos(θ)\\-\sin(θ)&-x&1\\\cos(θ)&1&x\end{matrix}\right|$ is independent of $θ.$

8. If $A=\left[\begin{matrix}1&-2&1\\0&-1&1\\2&0&-3\end{matrix}\right]$,then find $A^{-1}$ and hence solve the following system of equations

 $x-2y+z=0 ; -y+z=-2 ; 2x-3z=10$

9. Two schools P and Q want to award their selected students on the values of Tolerance,Kindness

 and Leadership.The school P wants to award Rs $x$ each, Rs $y$ each and Rs $z$ each of the three

 respective values to 3, 2 and 1 students respectively with a total award money of Rs 2200.School

 Q wants to spend Rs 3100 to award its 4,1 and 3 students on the respective values (by giving the

 same award money to the three values as school P).If the total amount of award for one prize on

 each value is Rs 1200,using matrices ,find the award money for each value.

10. There are 3 families A,B and C.The number of men,women and children in these families are as

|  |  |  |  |
| --- | --- | --- | --- |
|  | Men | Women | Children |
| Family A | 2 | 3 | 1 |
| Family B | 2 | 1 | 3 |
| Family C | 4 | 2 | 6 |

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 Daily expenses of men,womwn and children are Rs 200,Rs 150 and Rs 200 respectively.Only men

 and women earn and children do not.Using matrix multiplication ,calculate the daily expenses of

 each family.