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 **Determinants**

 **Assignment**

1. If a non-singular matrix A of order 9x9 with |A|= 6 then find |A.adjA| .
2. Using inverse of matrix, find Y, such that $\left[\begin{matrix}1&-4\\3&-2\end{matrix}\right]Y= \left[\begin{matrix}-16&-6\\7&2\end{matrix}\right]$ .
3. If x = $-4 $is a root of $\begin{matrix}x&2&3\\1&x&1\\3&2&x\end{matrix} $ = 0 , then find the other two roots.
4. Find the maximum value of $\begin{matrix}1&1&1\\1&1+sinx&1\\1&1&1+cosx\end{matrix}$ .
5. For what value of a, $\left[\begin{matrix}2a&-1\\-8&3\end{matrix}\right] is a singular matrix.$
6. Using the properties of determinants, Prove that

 $\begin{matrix}a&b-c&c+b\\a+c&b&c-a\\a-b&b+a&c\end{matrix}$ = (a + b + c)(a2 + b2 + c2).

1. If A = $\left[\begin{matrix}5&3\\-1&-2\end{matrix}\right]$ satisfies the equation x2 – 3x – 7 = 0 then find A-1 .
2. Prove that $\begin{matrix}a&b&ax+by\\b&c&bx+cy\\ax+by&bx+cy&0\end{matrix}$ = (b2 - ac)(ax2 + 2bxy + cy2) , by using properties of determinants.
3. Find A-1, by using elementary column operations, where A = $\left[\begin{matrix}2&-6\\1&-2\end{matrix}\right]$ .
4. Using properties of determinants , prove that $\begin{matrix}x+y&x&x\\5x+4y&4x&2x\\10x+8y&8x&3x\end{matrix}$ = x3.
5. Prove that $\begin{matrix}a^{2}&a^{2}-(b-c)^{2}&bc\\b^{2}&b^{2}-(c-a)^{2}&ca\\c^{2}&c^{2}-(a-b)^{2}&ab\end{matrix}$ = (a - b) (b - c) (c - a)(a + b + c)(a2 + b2 + c2), by using the properties of determinants.
6. Solve the following system of linear equations using matrix method:

 x + y + z = 6,000

 x + 3z = 11,000

 x + z = 2y .

1. Use the product $\begin{matrix}1&-1&2\\0&2&-3\\3&-2&4\end{matrix}$ $\begin{matrix}-2&0&1\\9&2&-3\\6&1&-2\end{matrix}$ to solve the system of equations

x + 3z = -9 , -x + 2y – 2z = 4, 2x – 3y + 4z = -3.

1. If A = $\begin{matrix}1&1&1\\1&2&-3\\2&-1&3\end{matrix}$ ,find A-1 , and use it to solve the system of linear equations using matrix method:

 x + y + 2z = 0 , x + 2y – z = 9 and x – 3y + 3z = -14 .

1. Three friends Rakhi, Mohini and Sonia visited market for purchasing fruits. Rakhi purchased 2kg mangoes, 3kg oranges and 1kg grapes and paid Rs. 420. Mohini purchased 3kg mangoes, 1kg grapes and 2kg oranges and paid Rs. 410. Sonia purchased 3kg mangoes, 2kg oranges and 2kg grapes and paid Rs. 500. Find the cost of each fruit per kg by matrix method.