# VIDYA SHREE ACADEMY SR. SEC. SCHOOL <br> An English Medium Co.Ed. School \| Science \& Commerce 

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Worksheet-19

Chapter-5

1. If matrix $A$ is $\left[\begin{array}{ccc}1 & -1 & 2 \\ 3 & 0 & -2 \\ 1 & 0 & 3\end{array}\right]$ then find $\operatorname{adj} A$ and prove that $A \cdot(\operatorname{adj} A)=|A| I_{3}=(\operatorname{adj} A) \cdot A$.
2. If matrix $A=F(\alpha)=\left[\begin{array}{ccc}\cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1\end{array}\right]$ then find $A^{-1}$ and prove that
(i) $A^{-1} A=I_{3}$
(ii) $A^{-1}=F(-\alpha)$
(iii) $A \cdot(\operatorname{adj} A)=|A| I=(\operatorname{adj} A) \cdot A$
3. If matrix $A=\left[\begin{array}{ll}1 & -1 \\ 2 & -1\end{array}\right]$ the prove that $A^{-1}=A^{3}$
4. If $A=\left[\begin{array}{lll}5 & 0 & 4 \\ 2 & 3 & 2 \\ 1 & 2 & 1\end{array}\right]$ and $B^{-1}=\left[\begin{array}{lll}1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4\end{array}\right]$ then find $(A B)^{-1}$
5. If $A=\left[\begin{array}{cc}1 & \tan \alpha \\ -\tan \alpha & 1\end{array}\right]$ then prove that $A^{T} A^{-1}=\left[\begin{array}{cc}\cos 2 \alpha & -\sin 2 \alpha \\ \sin 2 \alpha & \cos 2 \alpha\end{array}\right]$
6. If matrix $A=\left[\begin{array}{cc}-8 & 5 \\ 2 & 4\end{array}\right]$ then prove that $A^{2}+4 A-42 I=0$ then find $A^{-1}$
