MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MARCH-2018(AP)

Questions

1. Find the domain of the real function $f(x) = \sqrt{x^2 - 25}$

▶ **Watch Video Solution**

2. IF $f: R \rightarrow R, g: R \rightarrow R$ are defined by $f(x) = 3x - 1$ and $g(x) = x^2 + 1$, then find (fog)(2)

▶ Watch Video Solution

3. Define a symmetric matrix. Give one example of order 3×3

▶ Watch Video Solution

4. Find the Adjoint and Inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$

▶ Watch Video Solution

5. IF the vectors $-3\bar{i} + 4\bar{j} + \lambda\bar{k}$, $\mu\bar{i} + 8\bar{j} + 6\bar{k}$ are collinear vectors then find $\lambda \& \mu$.

Watch Video Solution

6. Find the vector equation of plane passing through Points (0,0,0) , (0,5,0) and (2,0,1)

Watch Video Solution

7. Find the angle between the vectors $\bar{i} + 2\bar{j} + 3\bar{k}$ and $3\bar{i} - \bar{j} + 2\bar{k}$

Watch Video Solution

8. Find $\sin 330°. \cos 120° + \cos 210°. \sin 300°$

9. Find the extreme values of $\cos 2x + \cos^2 x$

10. Prove that $\cosh 2x = 2\cosh^2 x - 1$

11. IF $A = \begin{bmatrix} 7 & -2 \\ -1 & 2 \\ 5 & 3 \end{bmatrix} . B = \begin{bmatrix} -2 & -1 \\ 4 & 2 \\ -1 & 0 \end{bmatrix}$ then   find AB'

and BA'

12. Show that the four points

$$-\bar{a} + 4\bar{b} - 3\bar{c},\ 3\bar{a} + 2\bar{b} - 5\bar{c},\ -3\bar{a} + 8\bar{b} - 5\bar{c},\ -3\bar{a} + 2\bar{b} + \bar{c}$$

are coplanar, where $\bar{a}, \bar{b}, \bar{c}$ are non-coplanar vectors.

13. Let $\bar{a}$ and $\bar{b}$ be vectors, satisfying $|\bar{a}| = |\bar{b}| = 5$ and $(\bar{a}, \bar{b}) = 45°$. Find the area of the triangle having $\bar{a} - 2\bar{b}$ and $3\bar{a} + 2\bar{b}$ as two of its sides.

14. If A is not an integral multiple of $\frac{\pi}{2}$, prove that

(i) $\tan A + \cot A = 2\cos ec2A$

(ii) cot A - tan A = 2cot 2A`

15. Solve $\sqrt{3}\sin\theta - \cos\theta = \sqrt{2}$

16. Prove that $\sin^{-1}\frac{4}{5} + \sin^{-1}\frac{5}{13} + \sin^{-1}\left(\frac{16}{65}\right) = \frac{\pi}{2}$

17. If $a = (b - c)\sec\theta$, then prove that $\tan\theta = \dfrac{2\sqrt{bc}}{b - c}\dfrac{\sin A}{2}$.

18. If $f: A \to B$, $g: B \to C$ are two bijective functions then prove that $gof: A \to C$ is also a bijective function.

19. Using the P.M.I 2prove that
$$\dfrac{1}{1.3} + \dfrac{1}{3.5} + \dfrac{1}{5.7} + \dots + nterms = \dfrac{n}{2n + 1}$$

20. Show that

$$\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$$

21. Solve the system of equations

$$2x - y + 3z = 9, \quad x + y + z = 6, \quad x - y + z = 2 \quad \text{using}$$

Gauss Jordan method.

22. Fo any four vectors $\bar{a}, \bar{b}, \bar{c}$ and $\bar{d}$, prove that

(i) $(\bar{a} \times \bar{b}) \times (\bar{c} \times \bar{d}) = [\overline{acd}]\bar{b} - [\overline{bcd}]\bar{a}$ and (ii)

$(\bar{a} \times \bar{b}) \times (\bar{c} \times \bar{d}) = [\overline{abd}]\bar{c} - [\overline{abc}]\bar{d}$

23. If A,B,C are angles in a triangle , then prove that

$$\cos A + \cos B + \cos C = 1 + 4\sin.\ \frac{A}{2}\sin.\ \frac{B}{2}\sin.\ \frac{C}{2}$$

24. Show that $r + r_3 + r_1 - r_2 = 4R\cos B.$