



Class XII Mathematics

Pre First Term Test - 3

TOTAL QUESTIONS : 20

MAXIMUM MARKS : 20

TIME ALLOWED : 1 HOUR 15 MINUTES

1. Principal value of $\operatorname{cosec}^{-1}\left(\frac{-2}{\sqrt{3}}\right)$ is equal to
 - a) $\pi / 3$
 - b) $-\pi / 3$
 - c) $\pi / 2$
 - d) $2 \pi / 3$
2. If $A = \begin{vmatrix} 3 & 5 \\ 2 & 0 \end{vmatrix}$ and $B = \begin{vmatrix} 1 & 17 \\ 0 & -10 \end{vmatrix}$ then $|AB|$ is equal to :
 - a) 80
 - b) 100
 - c) - 110
 - d) 92
3. The angle of intersection of the curve $y^2 = x$ and $x^2 = y$ is
 - a) $\tan^{-1}(3/2)$
 - b) $\tan^{-1}(2/3)$
 - c) $\tan^{-1}(1/2)$
 - d) $\tan^{-1}(1/5)$
4. Choose the incorrect statement.
 - a) A matrix $A = [3]$ is a scalar matrix of order 1
 - b) A matrix $B = \begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$ is a scalar matrix of order 2
 - c) A matrix $C = \begin{bmatrix} \sqrt{3} & 0 & 0 \\ 0 & \sqrt{3} & 0 \\ 0 & 0 & \sqrt{3} \end{bmatrix}$ of order 3 is not a scalar matrix
 - d) None of the above
5. If A_{ij} denotes the cofactor of the element a_{ij} of the determinant,
 $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$ then value of $a_{11}A_{31} + a_{13}A_{32} + a_{13}A_{33}$ is
 - a) 0
 - b) 5
 - c) 10
 - d) - 5



6. If $f(x) = \begin{cases} \frac{1 - \sqrt{2} \sin x}{\pi - 4x}, & x \neq \frac{\pi}{4} \\ a, & x = \frac{\pi}{4} \end{cases}$ is continuous at $\frac{\pi}{4}$, then a is equal

to

- a) 4 b) 2 c) 1 d) $\frac{1}{4}$

7. The constraints $-x + y \leq 1$, $-x + 3y \leq 9$ and $x, y \geq 0$ make

- a) Bounded feasible space b) Unbounded feasible space
c) Bounded and unfeasible space
d) None of these

8. $f(x) = \frac{e^{2x} - 1}{e^{2x} + 1}$, is

- a) An increasing function b) A decreasing function
c) An even function d) None of these

9. If each element of a third order determinant of value D is multiplied by 4, then value of the new determinant is:

- a) D b) $21D$ c) $64D$ d) $128D$

10. $f(x) = \begin{cases} \frac{x^3 + x^2 - 16x + 20}{(x-2)^2}, & x \neq 2 \\ k, & x = 2 \end{cases}$ If $f(x)$ is continuous for all x , then

$k =$

- a) 3 b) 5 c) 7 d) 9

11. Which of the following is correct statement?

- a) Diagonal matrix is also a scalar matrix
b) Identity matrix is a particular case of scalar matrix
c) Scalar matrix is not a diagonal matrix
d) Null matrix cannot be a square matrix

12. In the interval $[7, 9]$ the function $f(x) = [x]$ is discontinuous at _____, where $[x]$ denotes the greatest integer function

- a) 2 b) 4 c) 6 d) 8



13. A vertex of bounded region of inequalities $x \geq 0, x + 2y \geq 0, 2x + y \leq 4$
a) (1, 1) b) (0, 1) c) (3, 0) d) (0, 1)
14. If the area of a triangle ABC, with vertices A(1, 3), B(0, 0) and C(k, 0) is 3 sq. units, then the value of k is
a) 2 b) 3 c) 4 d) 5
15. The line $y = x + 1$ is a tangent to the curve $y^2 = 4x$ at the point
a) (1, 2) b) (2, 1) c) (1, -2) d) (-1, 2)
16. $-\frac{2\pi}{5}$ is the principal value of
a) $\cos^{-1}\left(\cos\frac{7\pi}{5}\right)$ b) $\sin^{-1}\left(\sin\frac{7\pi}{5}\right)$
c) $\sec^{-1}\left(\sec\frac{7\pi}{5}\right)$ d) None Of these
17. The minimum value of $\frac{\ln x}{x}$ in $(2, \infty)$ is
a) 1 b) e c) $2/e$ c) $1/e$
18. At $x = \frac{5\pi}{6}$, $f(x) = 2\sin 3x + 3\cos 3x$ is
a) maximum b) minimum
c) zero d) neither maximum nor minimum
19. The point on the curve $x^2 = 2y$ which is nearest to the point (0, 5) is
a) $(2\sqrt{2}, 4)$ b) $(2\sqrt{2}, 0)$ c) (0, 0) d) (2, 2)
20. The point of discontinuity of $f(x) = \tan\left(\frac{\pi x}{x+1}\right)$ other than $x = -1$ are
a) $x = 0$ b) $x = \pi$ c) $x = \frac{2m+1}{1-2m}$ d) $x = \frac{2m-1}{2m+1}$