DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 5**

Topic :- TRIGONOMETRIC FUNCTIONS

1. If $\theta \in [0,5\pi]$ and $r \in R$ such that $2\sin\theta = r^4 - 2r^2 + 3$, then the maximum number of values of the pair (r,θ) is
   a) 6 b) 8 c) 10 d) None of these
2. In a triangle ABC, $r =$
   a) $(s-a)\tan\frac{B}{2}$ b) $(s-b)\tan\frac{B}{2}$ c) $(s-b)\tan\frac{C}{2}$ d) $(s-a)\tan\frac{C}{2}$
3. If p_1,p_2,p_3 are altitude of a triangle ABC from the vertices A,B,C and Δ, the area of the triangle, then $\frac{1}{p_1^2}+\frac{1}{p_2^2}+\frac{1}{p_3^2} =$
   a) $\frac{\cot A + \cos B + \cot C}{\frac{\Delta}{\Delta}}$
   b) $\frac{\frac{\Delta}{\Delta}}{\cot A + \cot B + \cot C}$
   c) $\Delta(\cot A + \cot B + \cot C)$
   d) None of these
4. Number of solutions of the equation $\sin 2\theta + 2 = 4\sin\theta + \cos\theta$ lying in the interval $[\pi,5\pi]$, is
   a) 0 b) 2 c) 4 d) 5
5. If twice the square of the diameter of a circle is equal to half the sum of the squares of the sides of incribed triangle ABC, then $\sin^2 A + \sin^2 C$ is equal to
   a) 1 b) 2 c) 4 d) 8
6. $\tan 9° - \tan 27° - \tan 63° + \tan 81°$ is equal to
   a) 0 b) 1 c) -1 d) 4
7. If $\sin 4A - \cos 2A = \cos 4A - \sin 2A$, $\left(0 < A < \frac{\pi}{4}\right)$, then the value of $\tan 4A$ is
   a) 1 b) $\frac{1}{\sqrt{3}}$ c) $\sqrt{3}$ d) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$
8. In a ΔABC,$\sin A$ and $\sin B$ are the roots of the equation $c^2x^2 - c(a+b)x + ab = 0$, then $\sin C =$
   a) $1/\sqrt{2}$ b) $1/2$ c) 1 d) 0
9. If $\sin(\alpha+\beta) = 1$,$\sin(\alpha-\beta) = 1/2$; $\alpha,\beta \in [0,\pi/2]$, then $\tan(\alpha+2\beta)\tan(2\alpha+\beta)$ is equal to
   a) 1 b) -1 c) 0 d) $1/2$
10. If $a_{n+1} = \sqrt{\frac{1}{2}(1+a_n)}$, then $\cos\left(\frac{\sqrt{1-a_0^2}}{a_1a_2a_3\ldots\text{to }\infty}\right) =$
    a) 1 b) -1 c) a_0 d) $1/a_0$
11. If the angles of a triangle are in the ratio 1 :2 :7, then the ratio of the greatest side to the least side is
    a) $(\sqrt{5}-1):(\sqrt{5}+1)$ b) $(\sqrt{5}+1):(\sqrt{5}-1)$ c) $(\sqrt{5}+2):(\sqrt{5}-2)$ d) $(\sqrt{5}-2):(\sqrt{5}+2)$

12. In a $\Delta ABC, A = \frac{2\pi}{3}, b - c = 3\sqrt{3}$ cm and $\Delta = \frac{9\sqrt{3}}{2}$cm^2. Then, $a =$

a) $6\sqrt{3}$ cm b) 9 cm c) 18 cm d) 12 cm

13. If the radius of the incircle of a triangle with its sides $5k, 6k$, and $5k$ is 6, then k is equal to

a) 3 b) 4 c) 5 d) 6

14. The minimum value of $2^{\sin x} + 2^{\cos x}$, is

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

15. Minimum value of $\frac{1}{3\sin\theta - 4\cos\theta + 7}$ is

a) $\frac{1}{12}$ b) $\frac{5}{12}$ c) $\frac{7}{12}$ d) $\frac{1}{6}$

16. If $\operatorname{cosec}\theta = \frac{p+q}{p-q}$, then $\cot(\pi/4 + \theta/2) =$

a) $\sqrt{\frac{p}{q}}$ b) $\sqrt{\frac{q}{p}}$ c) $\sqrt{pq}$ d) pq

17. Suppose $0 < t < \pi$ and$\sin t + \cos t = \frac{1}{5}$. Then, $\tan\frac{t}{2}$ is equal to

a) 2 b) 3 c) $\frac{1}{3}$ d) 5

18. For what and only what values of α lying between 0 and π is the inequality $\sin\alpha\cos^3\alpha > \sin^3\alpha\cos\alpha$ valid?

a) $\alpha \in (0, \pi/4)$ b) $\alpha \in (0, \pi/2)$ c) $\alpha \in (\pi/4, \pi/2)$ d) None of these

19. If $\alpha + \beta - \gamma = \pi$, then$\sin^2\alpha + \sin^2\beta - \sin^2\gamma$ is equal to

a) $2\sin\alpha\sin\beta\cos\gamma$ b) $2\cos\alpha\cos\beta\cos\gamma$ c) $2\sin\alpha\sin\beta\sin\gamma$ d) None of these

20. If $\sec x \cos 5x + 1 = 0$, where $0 < x < 2\pi$, then x is equal to

a) $\frac{\pi}{5}, \frac{\pi}{4}$ b) $\frac{\pi}{5}$ c) $\frac{\pi}{4}$ d) None of these