DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 7**

Topic :- TRIGONOMETRIC FUNCTIONS

1. The number of solutions for the equation $\sin 2x + \cos 4x = 2$ is
   a) 0 b) 1 c) 2 d) ∞
2. If $\sin\theta_1 + \sin\theta_2 + \sin\theta_3 = 3$, then $\cos\theta_1 + \cos\theta_2 + \cos\theta_3 =$
   a) 3 b) 2 c) 1 d) 0
3. The equation $k\sin x + \cos 2x = 2k - 7$ possesses solution, if
   a) $k > 6$ b) $2 \le k \le 6$ c) $k > 2$ d) None of these
4. If $\cos 2B = \frac{\cos(A+C)}{\cos(A-C)}$, then $\tan A, \tan B, \tan C$ are in
   a) AP b) GP c) HP d) None of these
5. If n is an odd positive integer, then $\left(\frac{\cos A + \cos B}{\sin A - \sin B}\right)^n + \left(\frac{\sin A + \sin B}{\cos A - \cos B}\right)^n =$
   a) -1 b) 1 c) 0 d) None of these
6. If α, β are the solutions of $a\tan\theta + b\sec\theta = c$, then $\tan(\alpha+\beta) =$
   a) $\frac{2ac}{a^2 - c^2}$ b) $\frac{2ac}{c^2 - a^2}$ c) $\frac{2ac}{a^2 + c^2}$ d) $\frac{ac}{a^2 + c^2}$
7. If $\tan\theta + \tan\left(\theta + \frac{\pi}{3}\right) + \tan\left(\theta + \frac{2\pi}{3}\right) = 3$, then which of the following is equal to 1?
   a) $\tan 2\theta$ b) $\tan 3\theta$ c) $\tan^2\theta$ d) $\tan^3\theta$
8. If $y = 1 + 4\sin^2 x \cos^2 x$, then
   a) $1 \le y \le 2$ b) $-1 \le y \le 1$ c) $-3 \le y \le 3$ d) None of these
9. 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 the above
10. In a ΔABC, $\frac{\cot\frac{A}{2} + \cot\frac{B}{2} + \cot\frac{C}{2}}{\cot A + \cot B + \cot C} =$
    a) $\frac{(a+b+c)^2}{a^2+b^2+c^2}$ b) $\frac{a^2+b^2+c^2}{(a+b+c)^2}$ c) s d) Δ
11. The expression $\tan^2\alpha + \cot^2\alpha$ is
    a) ≥ 2 b) ≤ 2 c) ≥ -2 d) None of these
12. For $m \ne n$, if $\tan m\theta = \tan n\theta$, the different values of θ are in
    a) A.P.
    b) H.P.
    c) G.P.
    d) No particular sequence
13. If in a triangle ABC,
$\sin A : \sin C = \sin(A-B) : \sin(B-C)$ *then*, $a^2 : b^2 : c^2$ *are in*

a) A.P. b) G.P. c) H.P. d) None of these

14. If $\tan\theta = x - \frac{1}{4x}$, then $\sec\theta - \tan\theta$ is equal to

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

15. The number of values of $x \in [0,2\pi]$ that satisfy $\cot x - \operatorname{cosec} x = 2\sin x$, is

a) 3 b) 2 c) 1 d) 0

16. If R is the radius of circumscribing circle of a regular polygon of n-sides, then $R =$

a) $\frac{a}{2}\sin\left(\frac{\pi}{n}\right)$ b) $\frac{a}{2}\cos\left(\frac{\pi}{n}\right)$ c) $\frac{a}{2}\operatorname{cosec}\left(\frac{\pi}{n}\right)$ d) $\frac{a}{2}\operatorname{cosec}\left(\frac{\pi}{2n}\right)$

17. If $\frac{\sin x}{\sin y} = \frac{1}{2}, \frac{\cos x}{\cos y} = \frac{3}{2}$, where $x, y \in \left(0, \frac{\pi}{2}\right)$, then the value of $\tan(x+y)$ is equal to

a) $\sqrt{13}$ b) $\sqrt{14}$ c) $\sqrt{17}$ d) $\sqrt{15}$

18. If $\sin A + \sin B = \sqrt{3}(\cos B \cos A)$, then $\sin 3A + \sin 3B =$

a) 0 b) 2 c) 1 d) -1

19. If $\tan\beta = \cot\theta \tan\alpha$, then $\cot^2\left(\frac{\theta}{2}\right)$ is equal to

a) $\frac{\sin(\alpha+\beta)}{\sin(\alpha-\beta)}$ b) $\frac{\sin(\alpha-\beta)}{\sin(\alpha+\beta)}$ c) $\frac{\cos(\alpha+\beta)}{\cos(\alpha-\beta)}$ d) $\frac{\cos(\alpha-\beta)}{\cos(\alpha+\beta)}$

20. $\frac{\cos 9^\circ + \sin 9^\circ}{\cos 9^\circ - \sin 9^\circ}$ is equals to

a) $\tan 26^\circ$ b) $\tan 81^\circ$ c) $\tan 51^\circ$ d) $\tan 54^\circ$