



- d) None of these
11. If $1 + \sin \theta + \sin^2 \theta + \dots \infty = 4 + 2\sqrt{3}$, $0 < \theta < \pi$, $\theta \neq \frac{\pi}{2}$, then
 a) $\theta = \frac{\pi}{3}$ b) $\theta = \frac{\pi}{6}$ c) $\theta = \frac{\pi}{3}$ or $\frac{\pi}{6}$ d) $\theta = \frac{\pi}{3}$ or $\theta = \frac{2\pi}{3}$
12. In a ΔABC ,
 $a(b^2 + c^2) \cos A + b(c^2 + a^2) \cos B + c(a^2 + b^2) \cos C$ is equal to
 a) abc b) $2abc$ c) $3abc$ d) $4abc$
13. If $\tan(\pi \cos \theta) = \cot(\pi \sin \theta)$, then the value of $\cos\left(\theta - \frac{\pi}{4}\right)$ is equal to
 a) $\frac{1}{2\sqrt{2}}$ b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{3\sqrt{2}}$ d) $\frac{1}{4\sqrt{2}}$
14. The number of points of intersection of the two curves $y = 2 \sin x$ and $y = 5x^2 + 2x + 3$, is
 a) 0 b) 1 c) 2 d) ∞
15. If, in a ΔABC , $(a + b + c)(b + c - a) = \lambda bc$, then
 a) $\lambda < 0$ b) $\lambda > 4$ c) $\lambda > 0$ d) $0 < \lambda < 4$
16. The expression $\operatorname{cosec}^2 A \cot^2 A - \sec^2 A \tan^2 A - (\cot^2 A - \tan^2 A)(\sec^2 A \operatorname{cosec}^2 A - 1)$ is equal to
 a) 1 b) -1 c) 0 d) 2
17. The sides of a triangle are in A.P. and its area is $\frac{3}{5}$ times the area of an equilateral triangle of the same perimeter. Then, the ratio of the sides is
 a) 1 : 2 : 3 b) 3 : 5 : 7 c) 1 : 3 : 5 d) None of these
18. If $\tan \alpha = \frac{b}{a}$, $a > b > 0$ and if $0 < \alpha < \frac{\pi}{4}$, then $\sqrt{\frac{a+b}{a-b}} - \sqrt{\frac{a-b}{a+b}}$ is equal to
 a) $\frac{2 \sin \alpha}{\sqrt{\cos 2\alpha}}$ b) $\frac{2 \cos \alpha}{\sqrt{\cos 2\alpha}}$ c) $\frac{2 \sin \alpha}{\sqrt{\sin 2\alpha}}$ d) $\frac{2 \cos \alpha}{\sqrt{\sin 2\alpha}}$
19. If $\sin \theta + \cos \theta = x$, then $\sin^6 \theta + \cos^6 \theta = \frac{1}{4}[4 - 3(x^2 - 1)^2]$ for
 a) all real x b) $x^2 \leq 2$ c) $x^2 > 2$ d) None of these
20. If in a triangle ABC , $\frac{\sin A}{\sin C} = \frac{\sin(A-B)}{\sin(B-C)}$, then
 a) a, b, c are in A.P. b) a^2, b^2, c^2 are in A.P. c) a, b, c are in H.P. d) a^2, b^2, c^2 are in H.P.