CLASS – XI MATHEMATICS

Section A

Q.1 Simplify : $\frac{\sin(180+\theta)\cos(90+\theta)\tan(270-\theta)\cot(360-\theta)}{\sin(360-\theta)\cos(360+\theta)\operatorname{cosec}(-\theta)\sin(270+\theta)}$. Ans : 1

Q.2 If A , B , C , D be the angles of a cyclic quadrilateral , taken in order , Prove that: cos(180–A) + cos (180–B)+ cos(180+C) - sin(90+D) = 0 .

Q.3 Prove that : $\cos 34^0+\cos 43^0+\cos 137^0+\cos 214^0+\cos 300^0=\frac{1}{2}$.

Q.4 Prove that : $2\sin\frac{5\pi}{12}\sin\frac{\pi}{12}+2\cos\frac{5\pi}{12}\cos\frac{\pi}{12}=1$.

Q.5 Prove that : $\cos(45^0-A)\cos(45^0-B)-\sin(45^0-A)\sin(45^0-B)=\sin(A+B)$.

Q.6 Evaluate: $\sec\left(\frac{3\pi}{2}-\theta\right)\sec\left(\theta-\frac{5\pi}{2}\right)+\tan\left(\frac{5\pi}{2}+\theta\right)\tan\left(\theta-\frac{3\pi}{2}\right)$. Ans $-\tan\theta$

Q.7 Evaluate: $Cot\left(\theta-\frac{75\pi}{2}\right)$. Ans $-\tan\theta$

Q.8 Find the value of $\tan\left(\frac{59\pi}{2}+\theta\right)$. Ans $-\cot\theta$

Q.9 Prove that $\tan 75^0-\tan 30^0-\tan 75^0\tan 30^0=1$.

Q.10 $113\pi-\theta$ lies in which quadrant . Ans: 2nd Quadrant

Section B

Q.11 Prove that : $\sin 780\ \sin 480+\cos 120\ \sin 30=\frac{1}{2}$.

Q.12 Prove that : $\frac{\tan^2 2\theta-\tan^2\theta}{1-\tan^2 2\theta\tan^2\theta}=\tan 3\theta\tan\theta$.

OR

Find the value of : $\sin 10°+\sin 20°+\sin 30°+\ldots+\sin 360°$. **Ans: 0**

Q.13 If $\cos(\alpha+\beta)=\frac{7}{25}$, $\sin(\alpha-\beta)=\frac{8}{17}$ and α,β lie between 0 and $\frac{\pi}{4}$, find $\tan 2\alpha$ & $\tan 2\beta$.

Ans $Tan2\alpha=-\frac{416}{87}$ & $Tan2\beta=\frac{364}{297}$

OR

If tan x + tan y = a and cot y + cot x = b, prove that $\frac{1}{a}-\frac{1}{b}=\cot(x+y)$.

Q.14 Prove that: $\tan 80^0-\tan 10^0=2\tan 70^0$. **OR** Prove that $\sqrt{3}\cos 23^0-\sin 23^0=2\sin 37^0$.

Q.15 Prove that :tan7A – tan 5A – tan2A = tan7A tan5A tan2A.

Q.16 If $\tan\alpha=m/(m+1),\tan\beta=1/(2m+1)$ show that $\alpha+\beta=\frac{\pi}{4}$.

Q.17 Find x from the equation:$\operatorname{cosec}(90^0+\theta)-x\sin(90^0-\theta)\tan(180^0+\theta)=\sin(90^0+\theta)$. Ans $x=Tan\theta$

Q.18 Prove that $\cot\alpha\cot 2\alpha-\cot\alpha\cot 3\alpha-\cot 2\alpha\cot 3\alpha=1$.

Q.19 Prove that : $\frac{\sin(A-B)}{\sin A\sin B}+\frac{\sin(B-C)}{\sin B\sin C}+\frac{\sin(C-A)}{\sin C\sin A}=0$.

Resi.: D-79 Vasant Vihar ; Office : 89-Laxmi bai colony
Ph. :2337615; 4010685®, 92022217922630601(O) Mobile : 9425109601;9907757815 (P); 9300618521;9425110860(O);9993461523;9425772164

PREMIER INSTITUTE for X , XI & XII .© publication of any part of this paper is strictly prohibited..
Visit us at : http://www. targetmathematic.com; Email:agyat99@gmail.com.
This document was created using SOLID CONVERTER PDF To remove this message, purchase the product at www.SolidDocuments.com

Q.20 Prove that $\sin 600^0 \tan(-690^0) + \sec 840^0 \cot(-945^0) = \frac{3}{2}$.

Q.21 Find the value of $\sin(\pi/12)$ .Ans $\frac{\sqrt{3}-1}{2\sqrt{2}}$

Q.22 Prove that : $\cos\frac{2\pi}{3}\cos\frac{\pi}{4} - \sin\frac{2\pi}{3}\sin\frac{\pi}{4} = -\left(\frac{\sqrt{3}+1}{2\sqrt{2}}\right)$.

OR

If $\sin(\alpha+\beta) = 1$, $\sin(\alpha-\beta) = 1/2$; $\alpha, \beta \in [0, \pi/2]$, then find the value of $\tan(\alpha+2\beta)$. Ans $-\sqrt{3}$

Section C

Q.23 **(i)** Prove that : $\frac{\cos 17° + \sin 17°}{\cos 17° - \sin 17°} = \tan 62°$.

(ii) Prove that : $\frac{\operatorname{cosec}(90^0+\theta)+\cot(450^0+\theta)}{\operatorname{cosec}(90^0-\theta)+\tan(180^0-\theta)} + \frac{\tan(180^0+\theta)+\sec(180^0-\theta)}{\tan(360^0+\theta)-\sec(-\theta)} = 2.$

Q.24 If A+ B = 225^0 , prove that $\frac{\cot A}{1+\cot A}\cdot\frac{\cot B}{1+\cot B} = \frac{1}{2}$.

OR

If $\sin A = -\frac{5}{13}, \cos B = \frac{-3}{5}, 270^0 < A < 360^0$ and $180^0 < B < 270^0$, find the values of Tan (A + B) and sin (A – B). Ans $\tan(A+B) = 33/56$ & $\sin(A-B) = 63/65$

Q.25 If $\tan(\pi\cos\theta) = \cot(\pi\sin\theta)$ Prove that $\cos(\theta - \frac{\pi}{4}) = \pm\frac{1}{2\sqrt{2}}$.

OR

Prove that :**(i)** $\cos\left(\frac{\pi}{3}+x\right) = \frac{1}{2}(\cos x - \sqrt{3}\sin x)$ **(ii)** $\sin\left(\frac{\pi}{4}+x\right) + \sin\left(\frac{\pi}{4}-x\right) = \sqrt{2}\cos x$

Q.26 (i)If A + B + C = 180^0 , prove that : tanA + tanB + tanC = tanA tanB tanC.

(ii)If A + B + C = 180^0 , prove that: $\cot\frac{A}{2} + \cot\frac{B}{2} + \cot\frac{C}{2} = \cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$.

Q.27 (i)Simplify : $\frac{\tan(90^0+\theta)\sec(180^0+\theta)\sin(-\theta)}{\cot(180^0-\theta)\sin(360^0-\theta)\operatorname{cosec}(270^0+\theta)}$. Ans: 1

(ii) Simplify : $\frac{\tan(90^0-\theta)\sin(180^0+\theta)\sec(270^0+\theta)}{\cos(270^0-\theta)\operatorname{cosec}(180^0-\theta)\cot(360^0-\theta)}$. Ans : -1

Q.28 (i)If $\cos\alpha = 13/14$ & $\cos\beta = 1/7$ where α & β lies in Ist quadrant show that $\alpha - \beta = \frac{\pi}{3}$.

(ii)If A lies in the second quadrant and $3\tan A + 4 = 0$, then find the value of $2\cot A - 5\cos A + \sin A$ .Ans 23/10

Q.29 Find the value of(i)$\sin\left(\frac{31\pi}{3}\right)$ (ii)$\cos\frac{307\pi}{6}$ (iii)$\tan\left(-\frac{26\pi}{3}\right)$ (iv)$\cot(585^o)$(v) $\operatorname{cosec}(-750^o)$ (vi) $\cos(-3750^o)$. Ans (i) $\frac{\sqrt{3}}{2}$ (ii) $-\frac{\sqrt{3}}{2}$ (iii) $\sqrt{3}$ (iv) 1 (v) -2 (vi) $-\frac{\sqrt{3}}{2}$

Think only of the best ,

work only for the best ,

and expect only the best

Resi.: D-79 Vasant Vihar ; Office : 89-Laxmi bai colony
Ph. :2337615; 4010685®, 92022217922630601(O) Mobile : 9425109601;9907757815 (P); 9300618521;9425110860(O);9993461523;9425772164

PREMIER INSTITUTE for X , XI & XII .© publication of any part of this paper is strictly prohibited..
Visit us at : http://www. targetmathematic.com; Email:agyat99@gmail.com.
This document was created using SOLID CONVERTER PDF To remove this message, purchase the product at www.SolidDocuments.com