INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics ***Worksheet- Introduction to Trigonometry***

Date: 25-10-2020

SECTION A (1mark questions)	
Q.1.	If $\sin\theta = \cos\theta$, find the value of θ.
Q.2.	If $\cos A = \frac{7}{25}$, find the value of $\tan A + \cot A$.
Q.3.	If $x = a\sin\theta$ and $y = a\cos\theta$ then find the value of $x^2 + y^2$
Q.4.	Find the value of $\frac{\sin\theta}{\sqrt{1-\sin^2\theta}}$.
Q.5.	If $\cos\theta = \frac{2}{3}$, then find the value of $2\sec^2\theta + 2\tan^2\theta - 7$.
Q.6.	If $\tan(3x - 15°) = 1$ then find the value of x.
Q.7.	Find the value of $\frac{1-\cos 60^0}{\sin 60^0}$
Q.8.	Evaluate: $\sin^2 60^0 + 2\tan 45^0 - \cos^2 30^0$
Q.9.	If $\sin x + \cos y = 1$; $x = 30^0$ and y is an acute angle, find the value of y.
Q.10.	In ΔABC, right angled at B, AB = 5 cm and $\sin C = \frac{1}{2}$. Find the length of side AC.
SECTION B (2 marks questions)	
Q.11.	Prove that $(\sin\alpha + \cos\alpha)(\tan\alpha + \cot\alpha) = \sec\alpha + \text{cosec}\,\alpha$
Q.12.	Prove that: $\sqrt{\frac{1-\cos A}{1+\cos A}} = \text{cosec A -cot A}$
Q.13	Find A and B, if $\sin(A + 2B) = \frac{\sqrt{3}}{2}$ and $\cos(A + B) = \frac{1}{2}$
Q.14	If $\sqrt{3}\sin\theta - \cos\theta = 0$ and $0° < \theta < 90^0$, find the value of θ.
Q.15	In a ΔABC right angled at B, the ratio of AB to AC is $1:\sqrt{2}$. Find the value of $\frac{2tanA}{1+tan^2A}$

SECTION C (3mark questions)	
Q.16.	If $\tan\theta + \sin\theta = m$, $\tan\theta - \sin\theta = n$ then show that $m^2 - n^2 = 4\sqrt{mn}$.
Q.17.	If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, show that $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$.
Q.18.	Evaluate: $4 - \frac{\sin30^0+\tan45^0-\text{cosec}60^0}{\sec30^0+\cos60^0+\cot45^0}$
Q.19.	If $4\tan\theta=3$, evaluate $\frac{4\sin\theta-\cos\theta+1}{4\sin\theta+\cos\theta-1}$.
Q.20.	$\frac{1}{\sec A-1}+\frac{1}{\sec A+1} = 2\text{cosec A cot A}$
SECTION D (5 marks questions)	
Q.21.	Prove that: $\frac{\tan\theta}{1-\tan\theta} - \frac{\cot\theta}{1-\cot\theta} = \frac{\cos\theta+\sin\theta}{\cos\theta-\sin\theta}$
Q.22.	Prove that: $2(\cos^6\theta + \sin^6\theta) - 3(\sin^4\theta + \cos^4\theta) + 1 = 0$
Q.23.	Prove that: $\frac{\sin\theta}{\cot\theta+\text{cosec}\theta} = 2 + \frac{\sin\theta}{\cot\theta-\text{cosec}\theta}$
Q.24	Prove that $\sin^8\theta - \cos^8\theta = (1 - 2\cos^2\theta)(1 - 2\sin^2\theta\cos^2\theta$
Q.25	In ΔABC right angled at B, BC =7 cm and AC – AB = 1 cm. Find the value of cos A + sin A.

Answers

Answers	**1**	45°	**2**	$\frac{625}{168}$	**3.**	a^2	**4**	$\tan\theta$
	5	0	**6**	20^0	**7**	$2-\sqrt{3}$	**8**	2
	9	$\frac{1}{2}$	**10**	10 cm	**13**	A=60°, B=0	**14**	30°
	15	1	**18.**	$\frac{1+24\sqrt{3}}{11}$	**19.**	$\frac{13}{11}$	**25**	$\frac{31}{25}$

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