ASSIGNMENT -6 (TRIGONOMETRY)

STD X

ONE MARKERS

1) If $\theta = 45^o$, the value of $\text{cosec}^2\ \theta$ is a) $1/\sqrt{2}$ b)1 c) 1/2 d) 2

2) $\sin(60+\theta) - \cos(30-\theta)$ is equal to a)2 cos θ b) 2 sin θ c) 0 d) 1

3) If $\sin A + \sin^2 A = 1$, then the value of $\cos^2 A + \cos^4 A$ is

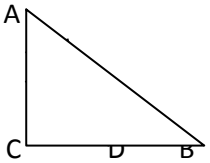
a) 2 b) 1 c) – 2 d) 0

4) The value of $[(\sec A + \tan A)(1 - \sin A)]$ is equal to

a) $\tan^2 A$ b) $\sin^2 A$ c) cos A d) sin A.

5) In fig .if D is mid-point of BC, the value of $\tan x^o / \tan y^o$ is

∟CAD= x^o, ∟CAB =y^o



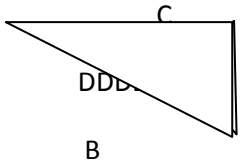
a) 1/3 b) 1 c) 2 d) 1 / 2

6) If $x = 3\sec^2\theta - 1$, $y = \tan^2\theta - 2$ then x – 3y is equal to

a) 3 b) 4 c) 8 d) 5

7) In the given fig. ∟ACB =90^o,∟BDC = 90^o,CD = 4cm, BD = 3 cm, AC =12 cm.cos A – sinA

Is equal to a) 5/12 b) 5/13 c) 7/12 d) 7/13.



8) The value of $\frac{\cos(90^\circ - \theta)\cos\theta - 1}{\tan\theta}$ is

a) $-\sin^2\theta$ b) $-\text{cosec}^2\theta$ c) $-\cos^2\theta$ d) $-\cot\theta$

9) If $\tan\theta + 1/\tan\theta = 2$, then the value of $\tan^2\theta + 1/\tan^2\theta$ is

a) 3 b) 4 c) 2 d) – 4

10) If $\sec 4A = \text{cosec}(A - 20^o)$, where 4A is an acute angle, then the value of A is

a) 21^o b) 22^o c) 23^o d) 24^o.

TWO MARKERS

1) If $7\sin^2\theta + 3\cos^2\theta = 4$, show that $\tan\theta = 1/\sqrt{3}$.

2) If $\sec \alpha = 5/4$, evaluate $\frac{1 - \tan \alpha}{1 + \tan \alpha}$.

3) If A and B are acute angles such that $\tan A = 1/2$ and $\tan B = 1/3$ and $\tan (A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$, find A+B

4) Prove that $\frac{\sin A + \cos A}{\text{Sin } A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2}{\sin^2 A - \cos^2 A}$.

5) Find acute angles A and B ,if $\sin (A+2B) = \sqrt{3}/2$ and $\cos (A+4B) = 0$

6) Find the value of $\tan 60^\circ$,geometrically.

7) Without using trigonometric tables,evaluate:

$$\frac{11}{7} \cdot \frac{\sin 70^\circ}{\cos 20^\circ} - \frac{4}{7} \cdot \frac{\cos 53^\circ \operatorname{cosec} 37^\circ}{\tan 15^\circ \tan 35^\circ \tan 55^\circ \tan 75}$$

8) In a right triangle ABC, right angled at B, if $\tan A = 1$,then verify that $2 \sin A \cos A = 1$

9) Prove that $(1+\cot^2 \theta)(1 - \cos \theta)(1 + \cos \theta) = 1$.

10) If $\sin \theta + \cos \theta = \sqrt{2} \sin (90 - \theta)$, determine $\cos \theta$.

THREE MARKERS

1) Prove that $\frac{\tan \theta - \cot \theta}{\text{Sin } \theta \cos \theta} = \tan^2 \theta - \cot^2 \theta$

2) If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$, show that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$.

3) Prove that $\frac{\sin \theta}{\cot \theta + \operatorname{cosec} \theta} = 2 + \frac{\sin \theta}{\cot \theta - \operatorname{cosec} \theta}$.

4) Prove the following identity :
(cosec A – sin A)(sec A− cos A)(tanA +cot A) = 1.

5) If $\frac{x}{a} \cos \theta + \frac{y}{b} \sin \theta = 1$ and $\frac{x}{a} \sin \theta - \frac{y}{b} \cos \theta = -1$,prove that $x^2/a^2 + y^2/b^2 = 2$.

FOUR MARKERS.

1) If $2 \cos \theta - \sin \theta = x$ and $\cos \theta - 3 \sin \theta = y$. Prove that $2x^2 + y^2 - 2xy = 5$.

2) If $\tan \theta + \sin \theta = m$,and $\tan \theta - \sin \theta = n$,show that $(m^2 - n^2)^2 = 16 mn$.

3) If $\sec \theta + \tan \theta = p$,prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$

4) If $x = \tan A + \sin A$ and $y = \tan A - \sin A$, show that $x^2 - y^2 = 4\sqrt{xy}$.

5) If $\sec \theta = x + 1/x$, prove that $\sec \theta + \tan \theta = 2x$ or $1/2x$.

ANSWERS

ONE MARKERS 1) d 2) c 3) b 4) c 5) d 6) c 7) d 8) a 9) c 10) b.

TWO MARKERS. 2) 1/7. 3) A+ B = 45° 5) A =30°, B = 15°. 6) tan 60=√3.

6) 1. 10) $\sqrt{2} + 1$.