



SUBJECT NAME –MATHEMATICS

WORKSHEET 3

TOPIC: TRIGONOMETRY (GRADE XI)

- 1 If A is an acute angle, then $\sin\left(\frac{\pi}{4} + A\right) \sin\left(\frac{\pi}{4} - A\right)$ is
a) $\cos 2A$ b) $\frac{1}{2} \cos 2A$ c) $\cos A$ d) $\frac{1}{2} \cos A$
- 2 if $\tan x = \frac{-4}{3}$ and x lies in II Quadrant, then $\sin \frac{x}{2}$ is
a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{5}$ d) $\frac{1}{\sqrt{5}}$
- 3 The value of $\sin 600^\circ \cdot \tan (-690^\circ) + \sec 840^\circ \cdot \cot(-945^\circ)$ is
a) $1/2$. b) $3/2$. c) 1 d) 0
- 4 If A, B, C, and D are the angles of a cyclic quadrilateral, then the value of $\cos A + \cos B + \cos C + \cos D$ is
a) 360° b) 180° c) 90° d) 0
- 5 If $x = \tan \theta$, then $\frac{1-x^2}{1+x^2}$ is
a) $\cos 2\theta$ b) $\cos \theta$ c) $\cos \frac{\theta}{2}$ d) $\cos 2\theta$
- 6 The value of $2\sin 2A - 8\cos A \sin^3 A$ is
a) $\cos 3A$ b) $\sin 3A$ c) $\sin 4A$ d) $\frac{1}{2} \sin 4A$
- 7 If $A + B = \frac{\pi}{4}$, then the value of $(1 + \tan A)(1 + \tan B)$ is
a) 0 b) 1 c) 2 d) 3
- 8 If $\cos A + \cos B = 2$, then the value of $\cos^2 \frac{A}{2} + \cos^2 \frac{B}{2}$ is
a) 0 b) 1 c) 2 d) $4/3$
- 9 Find the value of $\tan 135^\circ$
- 10 Value of $\sin 20^\circ [\tan 10^\circ + \cot 10^\circ]$ is _____.

Two marks Questions

- 11 Simplify: $\frac{\sin(180^\circ + \theta) \cos(360^\circ - \theta) \tan(270^\circ - \theta)}{\sec(90^\circ + \theta) \tan(-\theta) \sin(270^\circ + \theta)}$.
- 12 Express $\sin 4\theta - \sin 2\theta$ as product of trigonometric functions.
- 13 In any quadrilateral ABCD, prove that $\sin(A+B) + \sin(C+D) = 0$.
- 14 Prove that $\frac{\tan\left(\frac{\pi}{2} - x\right) \sec(\pi - x) \sin(-x)}{\sin(\pi + x) \cot(2\pi - x) \operatorname{cosec}\left(\frac{\pi}{2} - x\right)} = 1$

15 Express $2\sin \theta \cos 3\theta$ as sum or difference of trigonometric functions.

Four/Six marks Questions

16 Show that $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{16}$.

17 Prove that $\frac{(\cos 2B - \cos 2A)}{(\sin 2B + \sin 2A)} = \tan (A - B)$

18 Prove that $1 + \cos 2x + \cos 4x + \cos 6x = 4\cos x \cdot \cos 2x \cdot \cos 3x$

19 Show that $\sin 2x + 2 \sin 4x + \sin 6x = 4\cos^2 x \sin 4x$.

20 Prove that, $\frac{\sin A \cdot \sin 2A + \sin 3A \cdot \sin 6A}{\sin A \cdot \cos 2A + \sin 3A \cdot \cos 6A} = \tan 5A$.