



1	Evaluate $\tan 75^\circ$ .
2	Prove that $\sin (40 + \theta) \cdot \cos (10 + \theta) - \cos (40 + \theta) \cdot \sin (10 + \theta) = \frac{1}{2}$
3	Prove that $\cos \left( \frac{\pi}{4} + x \right) + \cos \left( \frac{\pi}{4} - x \right) = \sqrt{2} \cos x$
4	The minute hand of a watch is 1.5 cm long. How far does it tip move in 40 minute?
5	Find the value of $\tan \frac{\pi}{8}$ .
6	Convert into radian measures. $-37^\circ 30'$
7	Find the value of $\sin \frac{31\pi}{3}$
8	Prove that $2\cos \frac{\pi}{13} \cdot \cos \frac{9\pi}{13} + \cos \frac{3\pi}{13} + \cos \frac{5\pi}{13} = 0$
9	Convert into radian measures. $5^\circ 37' 30''$
10	Evaluate $2 \sin \frac{\pi}{12}$
11	Prove $\frac{\cos (\pi+x) \cdot \cos (-x)}{\sin (\pi-x) \cdot \cos \left( \frac{\pi}{2} + x \right)} = \cot^2 x$
12	Prove that $\tan 56^\circ = \frac{\cos 11^\circ + \sin 11^\circ}{\cos 11^\circ - \sin 11^\circ}$
13	If $\cot x = -\frac{5}{12}$ , $x$ lies in second quadrant find the values of other five trigonometric functions.

14	Prove that $\sin x + \sin 3x + \sin 5x + \sin 7x = 4 \cos x \cdot \cos 2x \cdot \sin 4x$
15	Prove that $\cos^2 x + \cos^2 \left(x + \frac{\pi}{3}\right) + \cos^2 \left(x - \frac{\pi}{3}\right) = \frac{3}{2}$
16	Prove that $\cos 2x \cdot \cos \frac{x}{2} - \cos 3x \cdot \cos \frac{9x}{2} = \sin 5x \sin \frac{5x}{2}$
17	Find the value of $\cos (-1710^\circ)$ .
18	Prove that $\cot 4x (\sin 5x + \sin 3x) = \cot x (\sin 5x - \sin 3x)$
19	Show that $\sqrt{2 + \sqrt{2 + 2 \cos 4\theta}} = 2 \cos \theta$
20	Prove that $\cos 20^\circ \cdot \cos 40^\circ \cdot \cos 60^\circ \cos 80^\circ = \frac{1}{16}$



INDIAN SCHOOL AL WADI AL KABIR  
DEPARTMENT OF MATHEMATICS 2023 – 2024  
Work Sheet – Class XI

Trigonometric Functions (Answer Key)

1	$\frac{\sqrt{3}+1}{\sqrt{3}-1}$
4	$l = 6.28 \text{ cm}$
5	$\tan \pi/8 = \sqrt{2} - 1$
6	$-\frac{5\pi}{24}$
7	$\frac{\sqrt{3}}{2}$
9	$\frac{\pi}{32} \text{ radian.}$
10	$\frac{\sqrt{3}-1}{\sqrt{2}}$
17	$\cos \frac{\pi}{2} = 0$