

Comprehensive Test Series-06 Trigonometric Function

TIME: 2 hr

MM: 60

General Instructions:

- All Questions are compulsory.
 - Marks are given along with the questions individually.
 - Use of calculator is not permitted.
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Q.1 The minute hand of a watch is 1.5 cm long. How far does its tip move in 50 minutes?

(Use $\pi = 3.14$)

Q.2 Find the radian measures corresponding to the degree measures: $-37^{\circ}30'$

Q.3 Find the degree measures corresponding to the radian measures (Use $\pi = \frac{22}{7}$)

(i) $\frac{1}{4}$

Q.4 A wheel makes 180 revolutions in one minute. Through how many radians does it turn in one second?

Q.5 Find the values of the following trigonometric ratios.

(i) $\operatorname{cosec} 390^{\circ}$

(iii) $\tan 480^{\circ}$

(v) $\sin \frac{31\pi}{3}$

(ii) $\cot 570^{\circ}$

(iv) $\sin (-1125^{\circ})$

(vi) $\cos(-1710)$

Q.6 Find the values of the other five trigonometric functions.

$\cot \theta = \frac{12}{5}$, θ in quadrant III

Q.7 Find the value of $\tan \frac{13\pi}{12}$

Prove the following

Q.8 $3 \sin \frac{\pi}{6} \sec \frac{\pi}{3} - 4 \sin \frac{5\pi}{6} + \cot \frac{\pi}{4} = 1$

Q.9 $\frac{\sin(x+y)}{\sin(x-y)} = \frac{\tan x + \tan y}{\tan x - \tan y}$

Q.10 $\frac{\sin 5x - 2 \sin 3x + \sin x}{\cos 5x - \cos x} = \tan x$

Q.11 $\cos^2 2x - \cos^2 6x = \sin 4x \cdot \sin 8x$

Q.12 $\frac{\cos 4x + \cos 3x + \cos 2x}{\sin 4x + \sin 3x + \sin 2x} = \cot 3x$

Q.13 $2 \cos \frac{\pi}{13} \cos \frac{9\pi}{13} + \cos \frac{3\pi}{13} + \cos \frac{5\pi}{13} = 0$

Q.14 $(\cos x + \cos y)^2 + (\sin x - \sin y)^2 = 4 \cos^2 \frac{x+y}{2}$

Q.15 $\tan 4x = \frac{4 \tan x(1 - \tan^2 x)}{1 - 6 \tan^2 x + \tan^4 x}$

Q.16 $\cos 6x = 32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1$

Q.17 Solve $\tan 2x = -\cot \left(x + \frac{\pi}{3}\right)$

Q.18 Find the general solution
 $\sin 2x + \cos x = 0$

Q.19 Find the value of $\tan \frac{\pi}{8}$

Q.20 Find $\sin \frac{x}{2}$, $\cos \frac{x}{2}$, $\tan \frac{x}{2}$

If $\tan x = -\frac{4}{3}$, x in quadrant II