

APOLLO

Inverse Trigonometric Identities and Solution of Trigonometric Equations FBISE Mathematics Class 12 (HSSC-II)

Domain B: Geometry

8 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

xvii.	What is the general solution of the trigonometric equation $\sin(x) = \frac{\sqrt{3}}{2}$?	$-\frac{\pi}{6}$	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$-\frac{\pi}{3}$
-------	---	------------------	-----------------	-----------------	------------------

ix.	The region bounded by $y = x^2$ and $y = x + 2$ is revolved around x-axis. Calculate the volume of a solid formed by the revolution of this region.	4	OR	Solve the trigonometric equation $2\cos^2(x) - 3\cos(x) + 1 = 0$ in the interval $[0, 2\pi]$.	4
x.	A car starts from rest and accelerates along			Find the equations of tangent and normal	

OR	Without using calculator, prove that $\csc^{-1}\left(\frac{2\sqrt{3}}{3}\right) - \csc^{-1}\left(\frac{2}{\sqrt{2}}\right) = \frac{\pi}{12}$	4
-----------	--	---

OR	An engineer is designing a bridge over a river. The bridge will have an inclined ramp that forms an angle of elevation with the ground. The total height of the bridge at its peak is 20 meters, and the base of the ramp is 50 meters long. a. Determine the angle of elevation of the ramp using an appropriate inverse trigonometric function. b. If the engineer wants to increase the height of the bridge to 30 meters while keeping the base length constant, calculate the new angle of elevation.	8
-----------	--	---

From a point on the ground, the angle of elevation to the top of a tower is 30° . After walking 40 meters closer to the tower, the angle of elevation becomes 60° . (a) Find the height of the tower. (b) Find the original distance from the first point to the base of the tower.	04
---	----

(vi)	Solve $2\cos x + 1 = 0$ for x in $[0, 2\pi)$ using periodic properties.	04
------	---	----

An engineer is designing a ramp such that it rises 6 m over a horizontal distance of 18 m. (a) Find the angle of inclination of the ramp with the horizontal using inverse trigonometric functions. (b) Find the length of the reop.	04
---	----

(vi)	Solve $2 \sin x + \sqrt{3} = 0$ for x in $[0, 2\pi)$ using periodic properties.	04
-------------	---	----