

TOPIC : " TRIGONOMETRY "

Page | 1

1. The principal solution of $\cos^{-1}\left(-\frac{1}{2}\right)$ is :

- (a) $\frac{\pi}{3}$ (b) $\frac{\pi}{6}$ (c) $\frac{2\pi}{3}$ (d) $\frac{3\pi}{2}$.

2. The principal solution of the equation $\cot x = -\sqrt{3}$ is

- (a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $\frac{5\pi}{6}$ (d) $-\frac{5\pi}{6}$.

3. Find the general solution of the equation $4\cos^2 x = 1$

4. Find the general solution of $\cos x + \sin x = 1$

5. Find the general solution of : $\cos x - \sin x = 1$

6. Find the general solution of $\sin x \tan x = \tan x - \sin x + 1$.

7. The general solution of the trigonometric equation $\tan^2 \theta = 1$ is

(a) $\theta = n\pi \pm \frac{\pi}{3}, n \in Z$

(b) $\theta = n\pi \pm \frac{\pi}{6}, n \in Z$

(c) $\theta = n\pi \pm \frac{\pi}{4}, n \in Z$

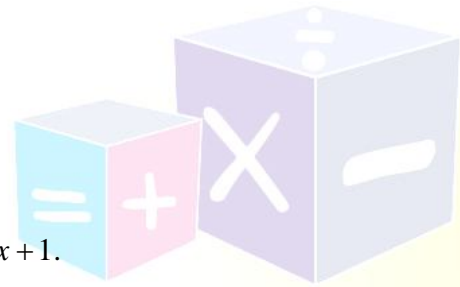
(d) $\theta = n\pi \quad n \in Z$

8. State and prove Sine Formula.

9. In any ΔABC , with usual notations , prove that $b^2 = c^2 + a^2 - 2ca \cos B$ or Cosine formula.

10. State and prove projection rule.

11. In ΔABC usual notations prove that : $2\left\{a \sin^2\left(\frac{C}{2}\right) + c \sin^2\left(\frac{A}{2}\right)\right\} = (a + c + b)$



Let's Play **with** Maths
www.letsplaywithmaths.org

12. In any $\triangle ABC$, if a^2, b^2 & c^2 are in arithmetic progression, then prove that $\cot A, \cot B, \cot C$ are in arithmetic progression.

Page | 2 13. In $\triangle ABC$, if $a \cos A = b \cos B$, then prove that the triangle is either a right angled or an isosceles triangle.

14. With usual notations, in $\triangle ABC$, prove that: $a(b \cos C - c \cos B) = b^2 - c^2$.

15. Prove that : $\sin^{-1}\left(-\frac{1}{2}\right) + \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) = \cos^{-1}\left(-\frac{1}{2}\right)$.

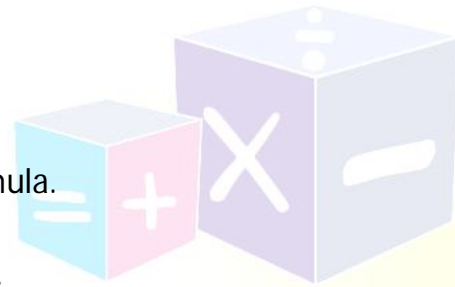
16. Show that : $\cos^{-1}\left(\frac{4}{5}\right) + \cos^{-1}\left(\frac{12}{13}\right) = \cos^{-1}\left(\frac{33}{65}\right)$.

17.. Show that $2 \sin^{-1}\left(\frac{3}{5}\right) = \tan^{-1}\left(\frac{24}{7}\right)$.

18. State and prove Half angle Sine/ Cos or tan formula.

19. State and prove Hero's Area of triangle formula.

20. State and prove Napier's Analogies.



Let's Play
with Maths
www.letsplaywithmaths.org