IIT-JEE / ENGINEERING

MATHS

Assignment 1.0

Inverse Trigonometric Functions

By

BHARAT BHUSHAN @ B. K. NAL
Assistant Professor (Computer Science)
Director, BSTI, Kokar

&

SUPRIYA BHARATI
Assistant Professor (Computer Science)
Asst. Director, BSTI, Kokar

Buddha Science & Technical Institute
Kokar, Ranchi-834001, Jharkhand, India
www.bharatsir.com

INVERSE TRIGONOMETRIC

1. **Show that** $\sin^{-1}\left(2x\sqrt{1-x^2}\right)=2\sin^{-1}x$.
2. **Prove that** $\sin^{-1}\left(\frac{12}{13}\right)+\cos^{-1}\left(\frac{4}{5}\right)+\tan^{-1}\left(\frac{63}{16}\right)=\pi$
3. **Solve for x:** $\tan^{-1}(x+1)+\tan^{-1}(x-1)=\tan^{-1}\left(\frac{8}{31}\right)$.
4. **Prove that :** $2\tan^{-1}\left(\frac{1}{5}\right)+\tan^{-1}\left(\frac{1}{8}\right)=\tan^{-1}\left(\frac{4}{7}\right)$.
5. **Solve for x:** $\tan^{-1}\left(\frac{1-x}{1+x}\right)-\frac{1}{2}\tan^{-1}x=0, x>0$
6. **Solve for x:** $\tan^{-1}\frac{1-x}{1+x}=\frac{1}{2}\tan^{-1}x; x>0$
7. **Prove that :** $\tan\left(\frac{\pi}{4}+\frac{1}{2}\cos^{-1}\frac{a}{b}\right)+\tan\left(\frac{\pi}{4}-\frac{1}{2}\cos^{-1}\frac{a}{b}\right)=\frac{2b}{a}$
8. **Evaluate :** $\sin\left(\frac{\pi}{3}-\sin^{-1}\left(-\frac{1}{2}\right)\right)$
9. **Prove the following :** $\tan^{-1}\frac{1}{3}+\tan^{-1}\frac{1}{5}+\tan^{-1}\frac{1}{7}+\tan^{-1}\frac{1}{8}=\frac{\pi}{4}$
10. **Solve for x:** $\tan^{-1}(2x)+\tan^{-1}(3x)=\frac{\pi}{4}$
11. **Solve for x:** $\tan^{-1}\left(\frac{x-1}{x-2}\right)+\tan^{-1}\left(\frac{x+1}{x+2}\right)=\frac{\pi}{4}$

Note : if any mistake on this, kindly inform on the mail id :

bknal1207@gmail.com

Your Observation! Our Correction !!