



**INDIAN SCHOOL DARSAIT**  
**DEPARTMENT OF MATHEMATICS(NO:2)**



**Subject :MATHEMATICS Topic :INVERSE TRIGONOMETRIC FUNCTIONS Date :12-4-2017**

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**Name of the Student: \_\_\_\_\_**

**Class &Division:**

**Roll. Number:**

Sl.No.	Questions	Mark s
1.	Evaluate : $\sin\left(\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right)$	1
2.	Prove the following : $\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{7} + \tan^{-1}\frac{1}{8} = \frac{\pi}{4}$	4
3.	Solve for x : $\tan^{-1}(2x) + \tan^{-1}(3x) = \frac{\pi}{4}$ .	4
4.	Solve for x : $\tan^{-1}\left(\frac{n-1}{n-2}\right) + \tan^{-1}\left(\frac{n+1}{n+2}\right) = \frac{\pi}{4}$ .	4
5.	Solve for x : $\tan^{-1}\left(\frac{1-x}{1+x}\right) = \frac{1}{2} \tan^{-1} x, x > 0$ .	4
6.	Prove that $\tan\left(\frac{\pi}{4} + \frac{1}{2} \cos^{-1}\left(\frac{a}{b}\right)\right) + \tan^{-1}\left(\frac{\pi}{4} - \frac{1}{2} \cos^{-1}\frac{a}{b}\right) = \frac{2b}{a}$ .	4
7.	Find the value of $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\left(\frac{x-y}{x+y}\right)$ .	4
8.	Prove the following $\tan^{-1}(\sqrt{x}) = \frac{1}{2} \cos^{-1}\left(\frac{1-x}{1+x}\right); x \in (0, 1)$ .	4
9.	Prove that $\left(\tan^{-1} \frac{c}{1+s} - \tan^{-1} \frac{x}{x}\right) = \frac{\pi}{4} - \frac{x}{2}; x \in \left(\frac{\pi}{2}, \frac{\pi}{2}\right)$ .	4
10.	Find the value of , $\cot \frac{1}{2} \left( \cos^{-1} \frac{2x}{1+x^2} + \sin^{-1} \frac{1-y^2}{1+y^2} \right),  x  < 1, y > 0,  xy  < 1$ .	4
	(BOARD 2017)	
11.	Prove that $\tan^{-1} \left( \frac{\sqrt{1+x^2} + \sqrt{1-x^2}}{\sqrt{1+x^2} - \sqrt{1-x^2}} \right) = \frac{f}{2} + \frac{1}{2} \cos^{-1} x^2, -1 < x < 1$	4
	(BOARD 2017)	
12.	Prove that $\tan^{-1} 1 + \tan^{-1} 2 + \tan^{-1} 3 = f$	1

13.	Prove that $\tan^{-1}(2x) + \tan^{-1}\left(\frac{4x}{1-x^2}\right) = \tan^{-1}\left(\frac{6x-x^3}{1-12x^2}\right)$ , $ x  < \frac{1}{2\sqrt{3}}$	4
	(BOARD 2017)	
14.	Solve for x, $\cos^{-1}\left(\frac{x^2-1}{x^2+1}\right) + \tan^{-1}\left(\frac{2x}{x^2-1}\right) = \frac{2f}{3}$	4
15.	If $\tan^{-1}\left(\frac{1}{1+1.2}\right) + \tan^{-1}\frac{1}{1+2.3} + \tan^{-1}\left(\frac{1}{1+x(x+1)}\right) = \tan^{-1}\theta$ , find $\theta$ .	4
	(BOARD 2015)	

Dear Children,  
There is no substitute for hard work.  
All the best. God Bless.