



INDIAN SCHOOL AL WADI AL KABIR  
Dept. of Mathematics 2021 – 2022  
Class XII – Work Sheet – Inverse Trigonometric Functions



1	Write $\cot^{-1} \left( \frac{1}{\sqrt{x^2-1}} \right)$ , $ x  > 1$ in the simple form
2	Write the principal value of $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3})$
3	Write the principal value of $\cos^{-1} \left( \cos \frac{2\pi}{3} \right) + \sin^{-1} \left( \sin \frac{2\pi}{3} \right)$
4	Find the value of $\tan^{-1} \left[ 2 \sin \left( 2 \cos^{-1} \frac{\sqrt{3}}{2} \right) \right]$
5	If $\tan^{-1} x + \tan^{-1} y = \frac{\pi}{4}$ , $xy < 1$ , then write the value of $x + y + xy$
6	Show that $\tan \left( \frac{1}{2} \sin^{-1} \frac{3}{4} \right) = \frac{4-\sqrt{7}}{3}$
7	Find the value of $\tan^{-1} \left( \frac{x}{y} \right) - \tan^{-1} \left( \frac{x-y}{x+y} \right)$
8	Evaluate $\tan \left( 2 \tan^{-1} \left( \frac{1}{5} \right) + \frac{\pi}{4} \right)$
9	Prove that: $\cot^{-1} 7 + \cot^{-1} 8 + \cot^{-1} 18 = \cot^{-1} 3$
10	Prove that: $\sin^{-1} \left( \frac{63}{65} \right) = \sin^{-1} \left( \frac{5}{13} \right) + \cos^{-1} \left( \frac{3}{5} \right)$
11	Prove that $\cos [\tan^{-1} \{ \sin (\cot^{-1} x) \}] = \sqrt{\frac{1+x^2}{2+x^2}}$
12	Prove that $\tan^{-1} \left( \frac{1}{2} \right) + \tan^{-1} \left( \frac{1}{5} \right) + \tan^{-1} \left( \frac{1}{8} \right) = \frac{\pi}{4}$
13	Prove that $2 \tan^{-1} \left( \frac{1}{5} \right) + \sec^{-1} \left( \frac{5\sqrt{2}}{7} \right) + 2 \tan^{-1} \left( \frac{1}{8} \right) = \frac{\pi}{4}$
14	Prove that $\tan^{-1} \left( \frac{1}{4} \right) + \tan^{-1} \left( \frac{2}{9} \right) = \frac{1}{2} \cos^{-1} \left( \frac{3}{5} \right)$
15	Prove that $\cos^{-1} \left( \frac{12}{13} \right) + \sin^{-1} \left( \frac{3}{5} \right) = \sin^{-1} \left( \frac{56}{65} \right)$