

51 (Sci)

(Inverse Trigonometric Fⁿ)

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* Find the principal value of the following

- 1) $\sin^{-1}(-\frac{1}{\sqrt{2}})$ | 3) $\sin^{-1}(\frac{1}{\sqrt{2}})$
- 2) $\tan^{-1}(-1)$ | 4) $\cos^{-1}(\frac{\sqrt{3}}{2})$

* Find the value of $\sin^{-1}(\sin \frac{3\pi}{5})$

* Find the value of $\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$

* Show that $\sin^{-1} \frac{3}{5} - \sin^{-1} \frac{8}{17} = \cos^{-1} \frac{84}{85}$

* Find the value of $\tan^{-1}(1) + \cos^{-1}(-\frac{1}{2}) + \sin^{-1}(\frac{1}{2})$

* Show that $\sin^{-1} \frac{12}{13} + \cos^{-1} \frac{4}{5} + \tan^{-1} \frac{63}{16} = \pi$

* Express $\tan^{-1}(\frac{\cos x}{1 - \sin x})$

in simplest form $-\frac{3\pi}{2} < x < \frac{\pi}{2}$

* Simplify

* prove that $\tan^{-1} x + \tan^{-1}(\frac{2x}{1-x^2}) = \tan^{-1}(\frac{3x-x^3}{1-3x^2})$ if $|x| < \frac{1}{\sqrt{3}}$

$\tan^{-1} \left[\frac{a \cos x - b \sin x}{b \cos x + a \sin x} \right]$ if $\frac{a \tan x}{b} > -1$

* If $\sin(\sin^{-1} \frac{1}{5} + \cos^{-1} x) = 1$ then find x .

* Solve (i) $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$

(ii) $2 \tan^{-1}(\cos x) = \tan^{-1}(2 \operatorname{cosec} x)$

* If $\tan^{-1}(\frac{x-1}{x-2}) + \tan^{-1}(\frac{x+1}{x+2}) = \frac{\pi}{4}$ then find x .