

Ex. 1] $\sin^{-1} \frac{x}{\sqrt{1+x^2}} + \cos^{-1} \frac{x+1}{\sqrt{x^2+2x+2}} = \tan^{-1}(x^2+x+1)$

Ex. 2] $\tan^{-1}(x+2) + \tan^{-1}(2-x) = \tan^{-1}\left(\frac{2}{3}\right)$

$x = \pm 3$

Ex. 3] $\sin^{-1} \frac{\sqrt{3}}{2} + 2 \tan^{-1} \frac{1}{\sqrt{3}}$

$\frac{2\pi}{3}$

Ex. 4] $\sin^{-1}\left(\frac{4}{5}\right) + \cos^{-1} \frac{2}{\sqrt{5}} = \cot^{-1}\left(\frac{1}{11}\right)$

$\tan^{-1}\left(\frac{11}{2}\right)$

Ex. 5] $2\left(\tan^{-1} 1 + \tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{3}\right) = \pi$

