$\cot 90° \Rightarrow 0 \quad \frac{\pi}{2} \times \frac{180}{\pi}$

(12) $\cot\left(\tan^{-1}a + \cot^{-1}a\right)$

$\Rightarrow \cot\left(\frac{\pi}{2}\right) \quad \left[\because \tan^{-1}x + \cot^{-1}x = \frac{\pi}{2}\right]$

$\Rightarrow 0$ Ans

(13) $\tan\frac{1}{2}\left[\sin^{-1}\frac{2x}{1+x^2} + \cos^{-1}\frac{1-y^2}{1+y^2}\right], |x|<1, y>0$ and $xy<1$

$\Rightarrow \tan\frac{1}{2}\left[2\tan^{-1}x + 2\tan^{-1}y\right]$

$\Rightarrow \tan\frac{1}{2}\times 2\left(\tan^{-1}x + \tan^{-1}y\right)$

$\Rightarrow \tan\left(\tan^{-1}\frac{x+y}{1-xy}\right)$

$\Rightarrow \boxed{\frac{x+y}{1-xy}}$ Ans

(14) If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then find the value of x.

$\Rightarrow \sin^{-1}\frac{1}{5} + y$

$\Rightarrow \frac{1}{5} = \sin y$

$\sin^{-1}x + \cos^{-1}x = \frac{\pi}{2}$

$\boxed{x = \frac{1}{5}}$ Ans

(15) $\tan^{-1}\left(\frac{x-1}{x-2}\right) + \tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$

$\Rightarrow \tan^{-1}\left(\frac{\frac{x-1}{x-2} + \frac{x+1}{x+2}}{1 - \left(\frac{x-1}{x-2}\right)\left(\frac{x+1}{x+2}\right)}\right) = \frac{\pi}{4}$

$\Rightarrow \tan^{-1}\dfrac{\dfrac{(x-1)(x+2)+(x+1)(x-2)}{(x-2)(x+2)}}{\dfrac{(x-2)(x+2)-(x-1)(x+1)}{(x-2)(x+2)}} = \frac{\pi}{4}$

$\Rightarrow \tan^{-1}\dfrac{x^2+2x-x-2+x^2-2x+x-2}{x^2+2x-2x-4-x^2-x+x+1} = \frac{\pi}{4}$

$\Rightarrow \tan^{-1}\dfrac{2x^2-4}{-3} = 1$

$\Rightarrow 2x^2 - 4 = -3$

$2x^2 = -3+4$

$2x^2 = 1$

$x^2 = \frac{1}{2}$

$x = \pm\frac{1}{\sqrt{2}}$ Ans