

21/05/2022

A+ COACHING POINT-DMR
MATHEMATICS DAILY PRACTICE SHEET #1
INVERSE TRIGONOMETRIC FUNCTIONS

Er. Renji Thomas

1. Prove that $2 \tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{7} = \tan^{-1} \frac{31}{17}$ (2m)
2. Write the function $\tan^{-1} \left(\frac{\cos x - \sin x}{\cos x + \sin x} \right)$, $-\frac{\pi}{4} < x < \frac{3\pi}{4}$ in simplest form (2m)
3. If $\sin \left(\sin^{-1} \frac{1}{5} + \cos^{-1} x \right) = 1$, then find the value of x . (2m)
4. If $\tan^{-1} \frac{x-1}{x-2} + \tan^{-1} \frac{x+1}{x+2} = \frac{\pi}{4}$, then find the value of x . (4m)
5. Prove that $\tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$ (4m)
6. Prove that
$$\cot^{-1} \left(\frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right) = \frac{x}{2}, \quad x \in \left(0, \frac{\pi}{4} \right)$$
 (4m)
7. $\cos^{-1} \left(\cos \frac{7\pi}{6} \right)$ is equal to (1m)
(a) $\frac{7\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$