assignment 2

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May 20, 2022

Outline

OUESTION

1(iii)

prove that

$$\frac{1}{2}\cos^{-1}\left(\frac{1-x}{1+x}\right) = \tan^{-1}\sqrt{x}$$

solution

let

$$x = tan^2(y)$$

$$\implies \frac{1}{2}\cos^{-1}\left(\frac{1-x}{1+x}\right)$$

$$\implies \frac{1}{2}\cos^{-1}\left(\frac{1-tan^2(y)}{1+tan^2(y)}\right)$$

$$\implies \frac{1}{2}\cos^{-1}(\cos 2y)$$

$$\implies \frac{1}{2}2y$$

$$\implies y$$

$$\implies tan^{-1}\sqrt{x}$$

$$\therefore \frac{1}{2}\cos^{-1}\left(\frac{1-x}{1+x}\right) = \tan^{-1}\sqrt{x}$$