

assignment 2

Pettugadi Pranav
CS21BTECH11063

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Outline

1 QUESTION

2 solution

QUESTION

1(iii)

prove that

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

solution

let

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

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

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

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

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

$$\Rightarrow y$$

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