

# Inverse Sine Simplification

Given:

$$f(x) = \sin^{-1} x + \cos^{-1} x$$

## Step 1: Use identity

$$\sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}, \quad \text{for all } x \in [-1, 1]$$

## Step 2: Domain of inverse functions

- Domain of  $\sin^{-1} x$  is  $[-1, 1]$
- Domain of  $\cos^{-1} x$  is  $[-1, 1]$

So, the domain of  $f(x)$  is:

$$\boxed{[-1, 1]}$$