## PROBLEM

The number of real solutions of

$\tan^{-1}\sqrt{x(x+1)}+\sin^{-1}\sqrt{x^2+x+1}=\pi/2$ is

*(1999 - 2 Marks)*

(a) zero (b) one (c) two (d) infinite

## SOLUTION

**(c)** $\tan^{-1}\sqrt{[x(x+1)]}=\pi/2-\sin^{-1}\sqrt{(x^2+x+1)}$

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

$\Rightarrow \cos^{-1}\frac{1}{\sqrt{x^2+x+1}}=\cos^{-1}\sqrt{x^2+x+1}$

$\Rightarrow x^2+x+1=1 \Rightarrow x(x+1)=0$

$\Rightarrow x=0,-1$ are the only real solutions.