Problem 2.

The eqn $2\cos^{-1}x + \sin^{-1}x = 11\pi/6$ has :

(a) Zero solutions (b) 1 solutions

(c) Two solutions (d) Infinitely many solutions.

Solution: we know that $\sin^{-1}x + \cos^{-1}x = \pi/2$

$\therefore 2\cos^{-1}x + \sin^{-1}x = 11\pi/6$

$\Rightarrow \cos^{-1}x + (\cos^{-1}x + \sin^{-1}x) = \frac{11}{6}\pi$.

$\Rightarrow \cos^{-1}x = 11\pi/6 - \pi/2 = \frac{8\pi}{6} = 4\pi/3$.

Now, $\cos^{-1}x \in [0, \pi]$ so, $\cos^{-1}x = 4\pi/3$ can't have a real solution

$\therefore$ Given Eqn has zero real solution.