

### Problems:

$x_1$  and  $x_2$  are roots of  $15x^2 + 28x + 12 = 0$ . then,

- (a) Both  $\cos^{-1} x_2$  &  $\cos^{-1} x_1$  are real
- (b) Both  $\sin^{-1} x_1$  &  $\sin^{-1} x_2$  are real
- (c) Both  $\sec^{-1} x_1$  &  $\sec^{-1} x_2$  are real
- ~~(d)~~ Both  $\cot^{-1} x_1$  and  $\cot^{-1} x_2$  are real.

Solution:

$$15x^2 + 28x + 12 = 0$$

$$\Rightarrow 15x^2 + 10x + 18x + 12 = 0$$

$$\Rightarrow (5x+6)(3x+2) = 0$$

$$\Rightarrow x = -6/5 \text{ and } x = -2/3.$$

Now, let  $x_1 = -6/5$  and  $x_2 = -2/3$ .

Since  $x_1 < -1$ ;  $\sin^{-1} x_1$  and  $\cos^{-1} x_1$  isn't real.

Since  $0 > x_2 > -1$ ;  $\sec^{-1} x_2$  isn't real.

Both  $\cot^{-1} x_1$  and  $\cot^{-1} x_2$  is real as its domain is  $\mathbb{R}$