



Exercise 7B

Question 14:

$$(2 \sin \theta + 3 \cos \theta) = 2$$

$$\begin{aligned}(2 \sin \theta + 3 \cos \theta)^2 + (3 \sin \theta - 2 \cos \theta)^2 \\ = 13(\sin^2 \theta + \cos^2 \theta) = 13\end{aligned}$$

$$(2)^2 + (3 \sin \theta - 2 \cos \theta)^2 = 13$$

$$(3 \sin \theta - 2 \cos \theta)^2 = 9$$

$$(3 \sin \theta - 2 \cos \theta) = \pm 3$$

Question 15:

$$\cos \theta + \sin \theta = \sqrt{2} \sin \theta$$

(squaring both side we get)

$$\Rightarrow (\cos \theta + \sin \theta)^2 = (\sqrt{2} \sin \theta)^2$$

$$\Rightarrow \cos^2 \theta + \sin^2 \theta + 2 \cos \theta \sin \theta = 2 \sin^2 \theta$$

$$\Rightarrow \sin^2 \theta = 2 \cos \theta \sin \theta + \cos^2 \theta$$

$$\Rightarrow \sin^2 \theta - \cos^2 \theta = 2 \cos \theta \sin \theta$$

$$\Rightarrow (\sin \theta + \cos \theta)(\sin \theta - \cos \theta) = 2 \sin \theta \cos \theta$$

$$(\sqrt{2} \sin \theta)(\sin \theta - \cos \theta) = 2 \sin \theta \cos \theta$$

$$\Rightarrow (\sin \theta - \cos \theta) = \sqrt{2} \cos \theta$$

Hence proved.

\*\*\*\*\* END \*\*\*\*\*