

Exercise 7B

Question 14:

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

$$(2\sin\theta + 3\cos\theta)^{2} + (3\sin\theta - 2\cos\theta)^{2}$$

$$= 13(\sin^{2}\theta + \cos^{2}\theta) = 13$$

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

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

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

Question 15:

$$cos θ + sin θ = √2 sin θ$$
  
(squaring both side we get)  
⇒  $(cos θ + sin θ)^2 = (√2 sin θ)^2$   
⇒  $cos^2 θ + sin^2 θ + 2 cos θ sin θ = 2 sin^2 θ$   
⇒  $sin^2 θ = 2 cos θ sin θ + cos^2$   
⇒  $sin^2 θ - cos^2 θ = 2 cos θ sin θ$   
⇒  $(sin θ + cos θ)(sin θ - cos θ) = 2 sin θ cos θ$   
( $√2 sin θ)(sin θ - cos θ) = 2 sin θ cos θ$   
⇒  $(sin θ - cos θ) = √2 cos θ$   
Hence proved.

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