

Exercise 7B

Question 16:

$$cos θ + sin θ = √2 sin θ$$
(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, (sin θ - cos θ) = √2 cos θ

Question 17:

LHS = 
$$\frac{a \sin \theta - b \cos \theta}{a \sin \theta + b \cos \theta}$$
  
LHS =  $\frac{a \tan \theta - b}{a \tan \theta + b}$   
=  $\frac{a \times \frac{a}{b} - b}{a \times \frac{a}{b} + b} = \frac{\left(\frac{a^2 - b^2}{b}\right)}{\left(\frac{a^2 + b^2}{b}\right)} = \frac{a^2 - b^2}{a^2 + b^2} = RHS$ 

:: LHS = RHS

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