



### Exercise 7B

Question 10:

$$(\cos \theta + \sin \theta) = 1$$

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

$$\Rightarrow 1^2 + (\cos \theta - \sin \theta)^2 = 2$$

$$\Rightarrow (\cos \theta - \sin \theta)^2 = 1$$

$$(\cos \theta - \sin \theta) = \pm 1$$

Question 11:

$$\tan A = n \tan B \quad \text{and} \quad \sin A = m \sin B$$

$$\Rightarrow \tan B = \frac{1}{n} \tan A \quad \text{and} \quad \sin B = \frac{1}{m} \sin A$$

$$\Rightarrow \cot B = \frac{n}{\tan A} \quad \text{and} \quad \operatorname{cosec} B = \frac{m}{\sin A}$$

$$\therefore \operatorname{cosec}^2 B - \cot^2 B = 1$$

$$\Rightarrow \frac{m^2}{\sin^2 A} - \frac{n^2}{\tan^2 A} = 1$$

$$\Rightarrow \frac{m^2}{\sin^2 A} - \frac{n^2 \cos^2 A}{\sin^2 A} = 1 \Rightarrow \frac{m^2 - n^2 \cos^2 A}{\sin^2 A} = 1$$

$$\Rightarrow m^2 - n^2 \cos^2 A = \sin^2 A \Rightarrow m^2 - n^2 \cos^2 A = 1 - \cos^2 A$$

$$\Rightarrow m^2 - 1 = n^2 \cos^2 A - \cos^2 A$$

$$\Rightarrow m^2 - 1 = \cos^2 A (n^2 - 1)$$

$$\Rightarrow \cos^2 A = \frac{(m^2 - 1)}{(n^2 - 1)}$$

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