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:

$\tan A = n\tan B$ and $\sin A = m\sin B$

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

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

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

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

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

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

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

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

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

********** END **********