

5 Solve each equation for x in the interval $0 \leq x \leq 360^\circ$.

a $\cot^2 2x + \operatorname{cosec} 2x - 1 = 0$

b $8 \sin^2 x + \sec x = 8$

c $3 \operatorname{cosec}^2 x - 4 \sin^2 x = 1$

d $9 \sec^2 x - 8 = \operatorname{cosec}^2 x$

6 Prove each of the following identities.

a $\operatorname{cosec}^2 x - \sec^2 x \equiv \cot^2 x - \tan^2 x$

c $(\cos x - 2 \sec x)^2 \equiv \cos^2 x + 4 \tan^2 x$

e $(\tan x + \cot x)^2 \equiv \sec^2 x + \operatorname{cosec}^2 x$

g $\sec^2 x + \operatorname{cosec}^2 x \equiv \sec^2 x \operatorname{cosec}^2 x$