

Video Tutorial: parkermaths.com/link/y2trig1

 KEY FACTS

$\tan^2 x + 1 \equiv \sec^2 x$ $\cot^2 x + 1 \equiv \operatorname{cosec}^2 x$

SOLVING EQUATIONS | EXAMPLE-PROBLEM PAIRS

4.1e Solve the equation $\cot \theta \operatorname{cosec} \theta = 2 \operatorname{cosec} \theta$, giving all values of θ in the interval $-\pi \leq \theta \leq \pi$.

Give your answers in radians to three significant figures.

4.1p Solve the equation $2 \operatorname{cosec}^2 \theta + 5 \operatorname{cosec} \theta = 3$, giving all values of x in the interval $0 \leq \theta \leq 2\pi$.

Give your answers in radians to 2 decimal places.

4.2e (a) Simplify $\sec \theta \cot \theta$.

(b) Simplify $\frac{\cot \theta}{\operatorname{cosec} \theta}$.

4.2p (a) Simplify $\sec \theta \sin \theta$.

(b) Simplify $\frac{\operatorname{cosec} \theta}{\sec \theta}$.

4.3e Solve the equation $3 \operatorname{cosec} \theta = 2 \tan \theta$, giving all values of θ in the interval $\theta \in [0, 2\pi]$.

Give your answers in terms of π .

4.3p Solve the equation $\sec x - \cot x = 0$, giving all values of x in the interval $x \in [0, 2\pi]$.

Give your answers in radians to 2 decimal places.

PROOF | DERIVING THE RECIPROCAL TRIGONOMETRIC IDENTITIES

$$\sin^2 x + \cos^2 x \equiv 1$$

Divide both sides
by $\sin^2 x$

$$\sin^2 x + \cos^2 x \equiv 1$$

Divide both sides by
 $\cos^2 x$

5.2e Solve the equation $2 \tan^2 \theta = 1 - \sec \theta$, giving all values of θ in the interval $\theta \in [0^\circ, 360^\circ]$.

Give your answers to the nearest degree.

5.2p Solve the equation $\operatorname{cosec}^2 x + 2 \cot x = 9$, giving all values of x in the interval $x \in [0, 2\pi]$.

Give your answers in radians to three significant figures.

