

## Y2 Trigonometry - Reciprocal Trigonometric Functions 1

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### Question 1

Find the exact solutions to the equation

$$3\operatorname{cosec} \theta + 1 = 7,$$

giving all values of  $\theta$  in the interval  $0 < \theta < 2\pi$ .

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### Question 2

Solve the equation

$$\frac{1}{3} \cot 2x = 1,$$

giving all values of  $x$  in the region  $-\pi \leq x \leq \pi$ .

Give your answers in radians to two decimal places.

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### Question 3

Solve the equation

$$4 \sec (t - 45^\circ) + 7 = -5,$$

giving all values of  $t$  in the region  $0^\circ \leq t \leq 360^\circ$ .

Give your answers in degrees to 1 decimal place.

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### Question 4

Find the exact solutions to the equation

$$3 \operatorname{cosec} 2x + 4 = 7$$

giving all values of  $x$  in the region  $-\pi \leq x \leq \pi$ .

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### Question 5

Solve the equation

$$\cot(2x - 30^\circ) = -\frac{5}{4}$$

giving all values of  $x$  in the region  $-180^\circ \leq x \leq 180^\circ$ .

Give your answers in degrees to the nearest degree.

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### Question 6

Find the exact solutions to the equation

$$\sec^2 x = 4$$

giving all values of  $x$  in the region  $0 \leq x \leq 2\pi$ .

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### Question 7

Find the exact solutions to the equation

$$(\operatorname{cosec} \theta - 2)(\sqrt{3} \operatorname{cosec} \theta + 2) = 0$$

giving all values of  $\theta$  in the region  $0 \leq \theta \leq 2\pi$ .

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### Question 8

A function  $f(x)$  is defined by

$$f(x) = \operatorname{cosec} x, \quad x \in \mathbb{R}.$$

State the range of  $f(x)$ .

$[ \quad ] (-1,1)$        $[ \quad ] (-\infty, -1) \cup (1, \infty)$        $[ \quad ] (-1,1)$        $[ \quad ] (-\infty, -1) \cup (1, \infty)$