

Some values of sin, cosine and tangent functions are best left as fractions, known as exact values.

When solving trigonometric equations in degrees, you might need to use exact values of common angles.

These can be found either using the triangles and ratios shown, or by memorising a table of values.

Find all the values of  $x$  in the interval  $x$  is greater than 0 but less than three hundred and sixty degrees for  $\tan^2 x = 3$  using a calculator.

Square root both sides of the equation to isolate  $\tan x$  which equals negative root three or root three.

Using the inverse of the tangent of positive root three to get sixty degrees.

To find all the values of  $x$  between zero and three hundred and sixty degrees, we need to find the negative values of  $\tan x$  in quadrant two and four, which are one hundred and eighty subtract sixty degrees, which is one hundred and twenty and three hundred and sixty subtract sixty to get three hundred degrees.

We then need to find the positive values of  $\tan x$  in quadrants one and three which are sixty and one hundred and eighty plus sixty degrees which is two hundred and forty degrees.

The full solution of  $\tan^2 x = 3$  is  $x = 60^\circ$ ,  $120^\circ$ ,  $240^\circ$  and  $300^\circ$ .

When solving trigonometric equations, remember the exact values for the common angles and to use the CAST diagram.