

## Chapter notes: 10 Trigonometric equations and identities

### Overview

*This is a very important chapter, with ideas from it being used in vectors, complex numbers and calculus. We recommend around six teaching hours.*

### Introductory problem

A solution to this problem should be clear if students try using their known trigonometric ratios. A graph might suggest how many solutions exist. This should then prompt the question of whether there are better methods for solving such equations. The worked solution is given at the end of the chapter, page 301; the idea being that students should be able to answer the question using the methods covered in the chapter.

### 10A Introducing trigonometric equations, p273

The key purpose of this section is to show that there is more than one solution to most trigonometric equations. Students should know how to get from one solution to the others.

### 10B Harder trigonometric equations, p281

The method used in Key point 10.5 is our recommendation for solving this problem. However it is possible to apply other methods, such as sketching a transformed graph.

### 10C Trigonometric identities, p291

This section applies many ideas from section 4H.

### 10D Using identities to solve equations, 297

Students will need to be very familiar with the ideas from chapter 4 for this section. In particular they must use factorisation to solve equations, rather than dividing by functions. They should also be very aware of hidden quadratics. Unfortunately there are no absolute rules for dealing with these identities

– it is not always the case that  $\tan x$  should be replaced with  $\frac{\sin x}{\cos x}$ . Students should be aware that

there can be more than one solution method, and that they may have to be creative about making links using trigonometric identities.