

Chapter notes: 9 Circular measure and trigonometric functions

Overview

This is an introductory chapter to trigonometry. Although not many examination questions are likely to be set on this chapter, it provides a foundation for more advanced work. It needs approximately four teaching hours.

Introductory problem

This problem is designed to get students linking circular motion with right-angled triangles. The worked solution is given at the end of the chapter, page 270; the idea being that students should be able to answer the question using the methods covered in the chapter.

9A Radian measure, p232

This section introduces the ideas of radians and thinking about angles using the unit circle. Although it is unlikely that examination questions will cover just this topic, it should help to develop ways of thinking (e.g. question 8) which will become very useful.

9B Definitions and graphs of sine and cosine functions, p239

It is not essential to memorise the results in Key points 9.3 and 9.4. It is more important to understand how the unit circle can be used to derive them.

9C Definition and graph of the tangent function, p248

The definition of the tangent function via the unit circle is now clearly mentioned on the syllabus. You might like to link the graphs to the ideas of odd and even functions from Section 6G.

9D Exact values of trigonometric functions, p251

Key point 9.9 is worth memorising.

9E Transformations of trigonometric graphs, p254

You should cover chapter 6 before attempting this section.

9F Modelling using trigonometric functions, p261

There are no specific teacher notes for this section.

9G Inverse trigonometric functions, p264

ERRATA: The graphs in Key point 9.14 are missing!

The order of composing the function and its inverse does matter, but this fact is unlikely to be examined so do not spend too much time on it.

Hints for the grade 7 questions:

8. (b) Write $y = \arccos x$, then express x in terms of y and apply known trigonometric identities.
9. Do not try to solve analytically – solve using your calculator.