

Lesson 8

Additional Mathematics
A-Level Pure Mathematics : Year 1
Trigonometry IV

8.1 Revision

*Any solution based entirely on graphical
or numerical methods is not acceptable*

Marks Available : 50

Question 1

- (a) (i) Sketch the graph of $y = \sin x$ over the interval $0^\circ \leq x \leq 360^\circ$

[2 marks]

- (ii) Correctly place 0° , 90° , 180° , 270° , and 360° on the x -axis.

[1 mark]

- (iii) Correctly place -1 , 0 , and $+1$ on the y -axis

[1 mark]

- (b) Calculate the values of x in the domain $0^\circ \leq x \leq 360^\circ$ for which

$$\sin x = -0.416$$

[4 marks]

Question 2

You are given that

$$\cos x = \frac{2}{3}$$

with $0^\circ < x < 90^\circ$

- (a) Use the identity $\cos^2 x + \sin^2 x = 1$ to find an **exact** value for $\sin x$ and, if appropriate, simplify your answer.

[3 marks]

- (b) Use the identity $\tan x = \frac{\sin x}{\cos x}$ and your part (a) answer to find an **exact** value for $\tan x$ and, if appropriate, simplify your answer.

[3 marks]

Question 3

Find the four values of x in the domain $0^\circ < x < 360^\circ$ that satisfy the equation

$$\cos(2x) = \frac{4}{5}$$

Give your answers to 1 decimal place.

[5 marks]

Question 4

Solve, for $0^\circ \leq x < 360^\circ$

$$\sin^2 x = \frac{3}{4}$$

[5 marks]

Question 5

(a) Show that the equation

$$5 \cos^2 x + 16 \sin x - 8 = 0$$

can be written as

$$5 \sin^2 x - 16 \sin x + 3 = 0$$

(b) Hence solve, for $0^\circ \leq x \leq 720^\circ$

$$5 \cos^2 x + 16 \sin x - 8 = 0$$

giving your answers to 1 decimal place.

[3 marks]

[6 marks]

Question 6

Solve, for $0^\circ < x < 360^\circ$

$$\tan x (\tan x - 2) = 3$$

[6 marks]

Question 7

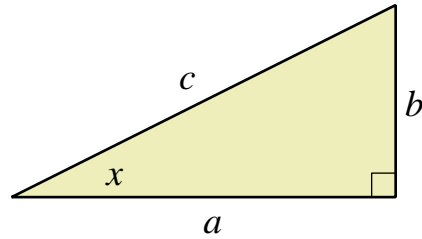
A-Level Examination Question from June 2009, Paper C2, Q7b (Edexcel)

Solve for $0^\circ \leq x \leq 360^\circ$

$$4 \sin x = 3 \tan x$$

[6 marks]

Question 8



Using the triangle, or otherwise, prove that, for $0^\circ \leq x \leq 90^\circ$

$$\tan^2 x \times \cos^2 x + \cos^2 x - 1 = 0$$

[5 marks]

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk