

Lesson 6

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

6.1 Beware The Multi-Angle



Suppose that the following trigonometric equation is to be solved;

$$2 \sin(2x) = -\sqrt{3}, \quad 0 \leq x \leq 360^\circ$$

This equation contains a Multi-Angle, the $2x$, buried inside the $\sin$ function. The Teaching Video shows how to solve this equation and the importance of ignoring the Multi-Angle until the very end of the solution.

Teaching Video : <http://www.NumberWonder.co.uk/v9044/6.mp4>



[6 marks]

6.2 Exercise

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

Marks Available : 30

Question 1

Find all solutions to the following equation for $0 \leq x \leq 360^\circ$

$$4 \cos(2x) = -3$$

Give your answers to one decimal place.

[6 marks]

Question 2

A-Level Examination Question from June 2005, Paper C2, Q5b edited (Edexcel)

Solve $\cos(2x) = -0.9$ for $0^\circ \leq x \leq 360^\circ$

Give your answers to one decimal place.

[4 marks]

Question 3

A-Level Examination Question from June 2008, Paper C2, Q9b edited (Edexcel)

Solve

$$\cos(3x) = -\frac{1}{2} \qquad 0^\circ \leq x \leq 360^\circ$$

[6 marks]

Question 4

Solve the equation $\sin^3(2x) = \frac{1}{8}$ for $0^\circ \leq x \leq 360^\circ$

[6 marks]

Question 5

$$\tan^2(3x) = 2 \tan(3x) - 1 \qquad 0^\circ \leq x \leq 360^\circ$$

[8 marks]

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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com