6.1 Beware The Multi–Angle

Suppose that the following trigonometric equation is to be solved;

$$2\sin(2x) = -\sqrt{3}, \qquad 0 \leqslant x \leqslant 360°$$

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

Question 1

Find all solutions to the following equation for $0 \leqslant x \leqslant 360°$

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

Give your answers to one decimal place.

[6 marks]

Question 2

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

Solve $\quad \cos(2x) = -0.9 \;$ for $\; 0° \leqslant x \leqslant 360°$

Give your answers to one decimal place.

[4 marks]

Question 3

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

Solve

$$cos(3x) = -\frac{1}{2} \qquad\qquad 0° \leqslant x \leqslant 360°$$

[6 marks]

Question 4

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

[6 marks]

Question 5

$$tan^2(3x) = 2\,tan(3x) - 1 \qquad\qquad 0° \leqslant x \leqslant 360°$$

[8 marks]