



Air maths tuition

Interact, engage and perform

Trig Equation

| Past Paper Question | C3 Edexcel June 2013

Q3(b)

Given that $2 \cos(x + 50)^\circ = \sin(x + 40)^\circ$

(a) Show, without using a calculator, that

$$\tan x^\circ = \frac{1}{3} \tan 40^\circ \quad (4)$$

(b) Hence solve, for $0 \leq \theta < 360$,

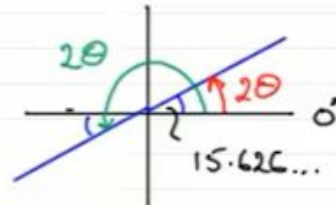
$$2 \cos(2\theta + 50)^\circ = \sin(2\theta + 40)^\circ$$

giving your answers to 1 decimal place. (4)

$$\begin{aligned} \tan 2\theta &= \frac{1}{3} \tan 40^\circ \\ &= 0.2796\dots \end{aligned}$$

$$\therefore 2\theta = \tan^{-1}(0.2796\dots)$$

$$\therefore 2\theta = 15.626\dots, 195.626\dots, \\ 375.626\dots, 555.626\dots$$



$$\therefore \theta = 7.813\dots, 97.813\dots, \\ 187.813\dots, 277.813\dots$$

$$\therefore \theta = 7.8^\circ, 97.8^\circ, 187.8^\circ, \\ 277.8^\circ \text{ (all to 1 dp)}$$

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