Solving Trigonometric Equations

Specification: AQA 7357: E6, E7 · Edexcel 9MA0: 5.6, 5.7

HOMEWORK Consolidation

1 Solve $\sin 2x = -\frac{1}{2}$ for $0° \le x < 360°$.

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2 Solve $\tan 3x = \sqrt{3}$ for $0° \le x < 180°$.

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3 Solve $\cos(2x - 30°) = \frac{1}{2}$ for $0° \le x < 360°$.

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4 Solve $\cos 2x = 3\cos x - 2$ for $0° \le x < 360°$.

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5 Solve $2\cos 2x = 1 + \sin x$ for $0° \le x < 360°$. Give your answers to 1 decimal place.

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6 Solve $\sin 2x = \sqrt{3}\sin x$ for $0° \le x < 360°$.

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7 Solve $\cos 2x = \sin x$ for $0 \le x < 2\pi$. Give exact answers.

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8 Solve $\sin(x - 45°) = 2\cos x$ for $0° \le x < 360°$. Give your answers to 1 decimal place.

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9 Solve $\tan 2x = \tan x$ for $0° \le x < 360°$.

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10 How many solutions does $\cos 3x = 0.2$ have for $0° \le x < 360°$? Explain.

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11 *AQA-style.*

(a) Show that $\sin 2\theta \tan\theta \equiv 1 - \cos 2\theta$, for $\cos\theta \neq 0$. [3 marks]

(b) Hence solve $\sin 2\theta \tan\theta = 0.5$ for $0° \le \theta < 360°$. [3 marks]

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12 *Edexcel-style.*

(a) Show that $2\cos 2\theta = 1 - \sin\theta$ can be written as $4\sin^2\theta - \sin\theta - 1 = 0$. [2 marks]

(b) Hence solve $2\cos 2\theta = 1 - \sin\theta$ for $0 \le \theta < 2\pi$. Give your answers to 3 decimal places. [4 marks]

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