Trigonometric Equations and Identities - Edexcel Past Exam Questions 2

1. Find the solutions of the equation $\sin(3x - 15°) = \frac{1}{2}$, for which $0 \leq x \leq 180°$. **(6)**

Jan 12 Q9 *(edited)*

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2. (*a*) Show that the equation

$$\tan 2x = 5 \sin 2x$$

can be written in the form

$$(1 - 5 \cos 2x) \sin 2x = 0.$$ **(2)**

(*b*) Hence solve, for $0 \leq x \leq 180°$,

$$\tan 2x = 5 \sin 2x,$$

giving your answers to 1 decimal place where appropriate. **(5)**

June 12 Q6

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3. Solve, for $0 \leq x < 180°$,

$$\cos (3x - 10°) = -0.4,$$

giving your answers to 1 decimal place. You should show each step in your working. **(7)**

Jan 13 Q4

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4. (i) Solve, for $-180° \leq x < 180°$,

$$\tan(x - 40°) = 1.5,$$

giving your answers to 1 decimal place. **(3)**

(ii) (*a*) Show that the equation

$$\sin\theta \tan\theta = 3\cos\theta + 2$$

can be written in the form

$$4\cos^2\theta + 2\cos\theta - 1 = 0.$$ **(3)**

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

$$\sin\theta \tan\theta = 3\cos\theta + 2,$$

showing each stage of your working. **(5)**

June 13 Q8

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5. (i) Solve, for $0 \leq \theta < 180°$

$$\sin(2\theta - 30°) + 1 = 0.4$$

giving your answers to 1 decimal place. **(5)**

(ii) Find all the values of x, in the interval $0 \leq \theta < 360°$, for which

$$9\cos^2 x - 11\cos x + 3\sin^2 x = 0$$

giving your answers to 1 decimal place. **(7)**

You must show clearly how you obtained your answers.

June 13(R) Q9

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6. (i) Solve, for $0 \leq \theta < 360°$, the equation $9\sin(\theta + 60°) = 4$, giving your answers to 1 decimal place. You must show each step of your working. **(4)**

[*Solutions based entirely on graphical or numerical methods are not acceptable.*]

June 14 Q7*(edited)*

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7. (i) Solve, for $0 \leq \theta < 180°$, the equation

$$\frac{\sin 2\theta}{(4\sin 2\theta - 1)} = 1$$

giving your answers to 1 decimal place. **(3)**

(ii) Solve, for $0 \leq x < 2\pi$, the equation

$$5\sin^2 x - 2\cos x - 5 = 0$$

giving your answers to 2 decimal places.
(*Solutions based entirely on graphical or numerical methods are not acceptable.*) **(5)**

June 14(R) Q7

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8. (i) Solve, for $0 \leq \theta < \pi$, the equation

$$\sin 3\theta - \sqrt{3}\cos 3\theta = 0,$$

giving your answers in terms of π. **(3)**

(ii) Given that

$$4\sin^2 x + \cos x = 4 - k, \qquad 0 \leq k \leq 3,$$

(*a*) find $\cos x$ in terms of k. **(3)**

(*b*) When $k = 3$, find the values of x in the range $0 \leq x < 360°$. **(3)**

June 15 Q8

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9. (ii) Solve, for $0 \leq x < 360°$,

$$4\cos^2 x + 7\sin x - 2 = 0,$$

giving your answers to one decimal place.

(*Solutions based entirely on graphical or numerical methods are not acceptable.*) **(6)**

June 16 Q6(edited)

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10. In the triangle ABC, $AB = 16$ cm, $AC = 13$ cm, angle $ABC = 50°$ and angle $BCA = x°$

Find the two possible values for x, giving your answers to one decimal place. **(4)**

June 17 Q2

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11. (*a*) Show that the equation

$$\cos^2 x = 8\sin^2 x - 6\sin x$$

can be written in the form

$$(3\sin x - 1)^2 = 2 \quad \textbf{(3)}$$

(*b*) Hence solve, for $0 \leqslant x < 360°$,

$$\cos^2 x = 8\sin^2 x - 6\sin x$$

giving your answers to 2 decimal places. **(5)**

June 17 Q8
