

1 Solve, for $0 \leq x < 180^\circ$, the equation

$$\cos(2x + 15) = 0.3$$

Give your answers to one decimal place.

(Total for question 1 is 5 marks)

2 Solve, for $0 \leq \theta < 180^\circ$, the equation

$$\sin(3\theta - 15) = 0.7$$

Give your answers to two decimal places.

(Total for question 2 is 5 marks)

3 Solve, for $-180 \leq \theta < 180^\circ$, the equation

$$\tan(\theta + 30) = -2.5$$

Give your answers to one decimal place.

(Total for question 3 is 4 marks)

4 Solve, for $0 \leq x < 360^\circ$, the equation

$$5 \cos(x - 40) = 2$$

Give your answers to two decimal places.

(Total for question 4 is 4 marks)

5 Solve, for $0 \leq x < 360^\circ$, the equation

$$\tan^2(x) = 3$$

(Total for question 5 is 5 marks)

6

- (a) Show that the equation

$$2 \sin^2 x = 7 \cos x + 5$$

can be written in the form

$$2 \cos^2 x + 7 \cos x + 3 = 0$$

(3)

- (b) Hence solve, for $0 \leq x < 360^\circ$, the equation

$$2 \sin^2 x = 7 \cos x + 5$$

(5)

(Total for question 6 is 8 marks)

7

- (a) Show that the equation

$$6 \cos^2 x = 4 - \sin x$$

can be written in the form

$$6 \sin^2 x - \sin x - 2 = 0$$

(3)

- (b) Hence solve, for $0 \leq x < 360^\circ$, the equation

$$6 \cos^2 x = 4 - \sin x$$

Give your answers to one decimal place where appropriate.

(6)

(Total for question 7 is 9 marks)

- 8** Find all values for x in the interval $0 \leq x < 360^\circ$ for which

$$2 \cos^2 x - 3 \sin^2 x = 14 \cos x$$

Give your answers to one decimal place.

(Total for question 8 is 8 marks)

9

- (a) Sketch the graph of $y = \sin(x - 30)$ for x in the interval $0 \leq x < 360^\circ$.

(2)

- (b) Find all values for x in the interval $0 \leq x < 360^\circ$ for which

$$\sin(x - 30) = 0.3$$

Give your answers to one decimal place.

(4)

(Total for question 9 is 6 marks)

10 Find all values for x in the interval $0 \leq x < 360^\circ$ for which

$$3 \tan x = 4 \sin x$$

Give your answers to one decimal place where appropriate.

(Total for question 10 is 7 marks)

11

(a) Show that the equation

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

can be written in the form

$$4 \cos^2 2x + 2 \cos 2x - 3 = 0.$$

(4)

(b) Find all values of x in the interval $0 \leq x < 180^\circ$ for which

$$3 \sin 2x \tan 2x = \cos 2x + 2.$$

Give your answers to two decimal places.

(6)

(Total for question 11 is 10 marks)
