[Maximum mark: 5]

Let $\sin\theta = \frac{\sqrt{5}}{3}$, where θ is acute.

(a) Find $\cos\theta$. [3]

(b) Find $\cos 2\theta$. [2]

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[Maximum mark: 8]

Let $\sin\theta = \frac{2}{\sqrt{13}}$, where $\frac{\pi}{2} < \theta < \pi$.

(a) Find $\cos\theta$. *[3 marks]*

(b) Find $\tan 2\theta$. *[5 marks]*

[Maximum mark: 7]

Given that $\sin x = \frac{3}{4}$, where x is an obtuse angle, find the value of

(a) $\cos x$; [4]

(b) $\cos 2x$. [3]

[Maximum mark: 7]

The straight line with equation $y = \frac{3}{4}x$ makes an acute angle θ with the x-axis.

(a) Write down the value of $\tan\theta$. *[1 mark]*

(b) Find the value of

(i) $\sin 2\theta$;

(ii) $\cos 2\theta$. *[6 marks]*

Solve $4cos^2x - 3 = 0$, for $0 \leq x < 2\pi$

[Maximum mark: 7]

(a) Show that $4-\cos 2\theta+5\sin\theta=2\sin^2\theta+5\sin\theta+3$. *[2 marks]*

(b) **Hence**, solve the equation $4-\cos 2\theta+5\sin\theta=0$ for $0\le\theta\le 2\pi$. *[5 marks]*

[Maximum mark: 7]

Solve the equation $2\cos x=\sin 2x$, for $0\le x\le 3\pi$.

[Maximum mark: 7]

(a) Show that $4-\cos 2\theta+5\sin\theta=2\sin^2\theta+5\sin\theta+3$. *[2 marks]*

(b) **Hence**, solve the equation $4-\cos 2\theta+5\sin\theta=0$ for $0\le\theta\le 2\pi$. *[5 marks]*

[Maximum mark: 7]

Solve the equation $2\cos x=\sin 2x$, for $0\le x\le 3\pi$.

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