1. Nov/2021/Paper_12/No.4

Solve the equation $\cot\left(2x+\frac{\pi}{3}\right)-\sqrt{3}=0$, where $-\pi < x < \pi$ radians. Give your answers in terms of π. [4]

2. Nov/2021/Paper_13/No.3

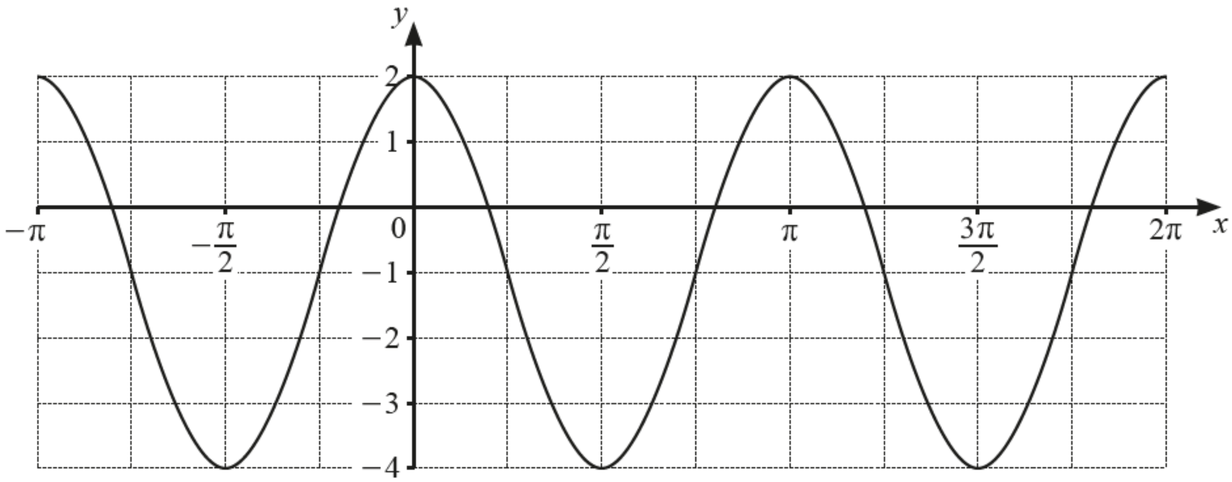
Solve the equation $\cot^2\left(2x - \frac{\pi}{3}\right) = \frac{1}{3}$, where x is in radians and $0 \leqslant x < \pi$. [5]

3. Nov/2021/Paper_22/No.3

(a) Show that $\dfrac{1}{\sec x - 1} + \dfrac{1}{\sec x + 1} = 2\cot x \operatorname{cosec} x$. [4]

(b) Hence solve the equation $\dfrac{1}{\sec x - 1} + \dfrac{1}{\sec x + 1} = 3\sec x$ for $0° < x < 360°$. [4]

4. Nov/2021/Paper_23/No.3



(a) The curve has equation $y = a\cos bx + c$ where a, b and c are integers. Find the values of a, b and c. [3]

(b) Another curve has equation $y = 2\sin 3x + 4$. Write down

(i) the amplitude, [1]

(ii) the period in radians. [1]

5. Nov/2021/Paper_23/No.5

(a) Show that $\dfrac{1}{\operatorname{cosec} x - 1} + \dfrac{1}{\operatorname{cosec} x + 1} = 2 \tan x \sec x$. [4]

(b) Hence solve the equation $\dfrac{1}{\operatorname{cosec} x - 1} + \dfrac{1}{\operatorname{cosec} x + 1} = 5 \operatorname{cosec} x$ for $0° < x < 360°$. [4]

6. June/2021/Paper_11/No.9(ii)

(ii) Hence solve the equation $6\sin\theta\cos\theta+3\cos\theta+4\sin\theta+2=0$ for $0° < \theta < 360°$. [4]

(b) Solve the equation $\frac{1}{2}\sec\left(2\phi+\frac{\pi}{4}\right)=\frac{1}{\sqrt{3}}$ for $-\pi < \phi < \pi$, where ϕ is in radians. Give your answers in terms of π. [5]

7. June/2021/Paper_12/No.10

(a) Solve the equation $\sin\alpha\,\mathrm{cosec}^2\alpha + \cos\alpha\,\sec^2\alpha = 0$ for $-\pi < \alpha < \pi$, where α is in radians. [4]

(b) (i) Show that $\dfrac{\cos\theta}{1-\sin\theta} + \dfrac{1-\sin\theta}{\cos\theta} = 2\sec\theta$. [4]

(ii) Hence solve the equation $\dfrac{\cos 3\phi}{1-\sin 3\phi} + \dfrac{1-\sin 3\phi}{\cos 3\phi} = 4$ for $0° \leqslant \phi \leqslant 180°$. [4]

8. June/2021/Paper_24/No.8

(a) **(i)** Show that $\dfrac{\cos^2 2x}{1+\sin 2x} = 1 - \sin 2x$. [2]

(ii) Hence solve $\dfrac{3\cos^2 2x}{1+\sin 2x} = 1$ for $0° \leqslant x \leqslant 90°$. [4]

(b) Solve $\cot\left(y - \dfrac{\pi}{2}\right) = \sqrt{3}$ for $0 \leqslant y \leqslant \pi$ radians. [3]