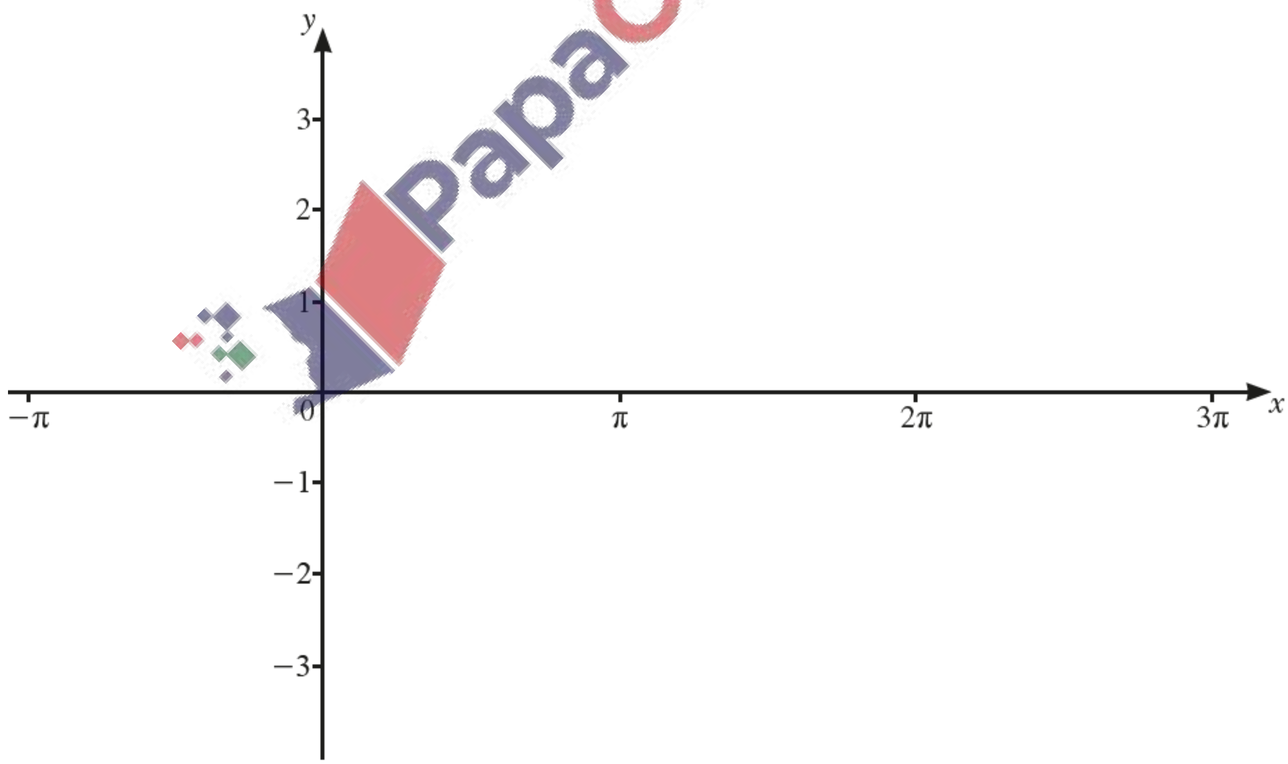
1. Nov/2020/Paper_12/No.3

(a) Write down the amplitude of $2\cos\frac{x}{3} - 1$. [1]

(b) Write down the period of $2\cos\frac{x}{3} - 1$. [1]

(c) On the axes below, sketch the graph of $y = 2\cos\frac{x}{3} - 1$ for $-\pi \leqslant x \leqslant 3\pi$ radians.



[3]

2. Nov/2020/Paper_13/No.11

(a) Given that $2\cos x = 3\tan x$, show that $2\sin^2 x + 3\sin x - 2 = 0$. [3]

(b) Hence solve $2\cos\left(2\alpha + \frac{\pi}{4}\right) = 3\tan\left(2\alpha + \frac{\pi}{4}\right)$ for $0 < \alpha < \pi$ radians, giving your answers in terms of π. [4]

3. Nov/2020/Paper_22/No.11

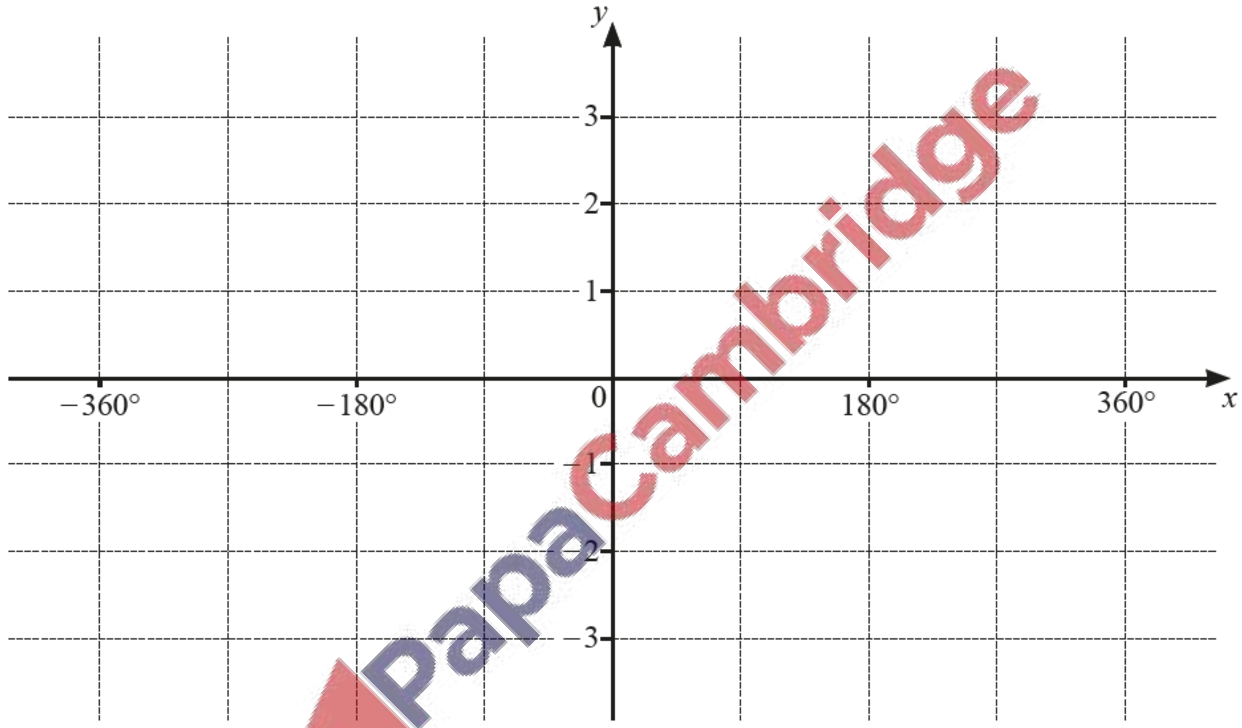
(a) Show that $\dfrac{\sin x \tan x}{1-\cos x} = 1+\sec x$. [4]

(b) Solve the equation $5\tan x - 3\cot x = 2\sec x$ for $0° \leqslant x \leqslant 360°$. [6]

4. June/2020/Paper_11/No.2

(a) Write down the period of $2\cos\frac{x}{3}-1$. [1]

(b) On the axes below, sketch the graph of $y=2\cos\frac{x}{3}-1$ for $-360^\circ \leqslant x \leqslant 360^\circ$. [3]



5. June/2020/Paper_11/No.10

(a) **(i)** Show that $\dfrac{1}{\sec\theta - 1} - \dfrac{1}{\sec\theta + 1} = 2\cot^2\theta$. [3]

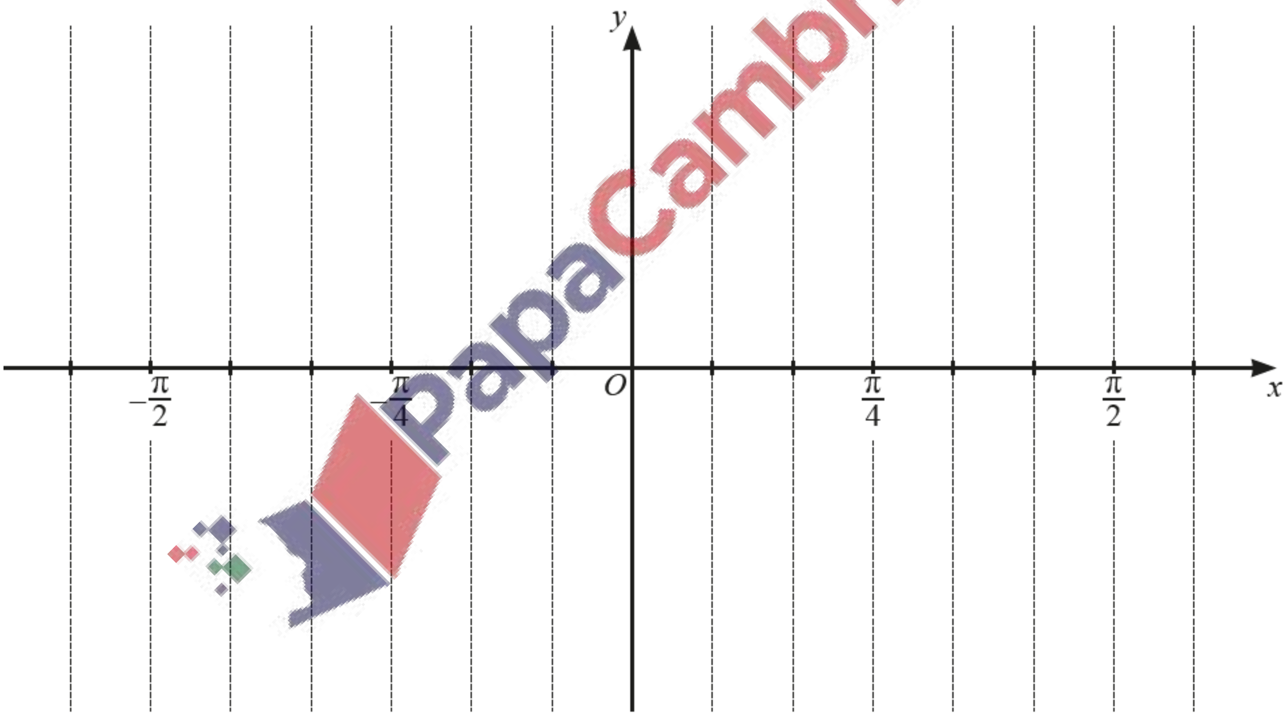
(ii) Hence solve $\dfrac{1}{\sec 2x - 1} - \dfrac{1}{\sec 2x + 1} = 6$ for $-90° < x < 90°$. [5]

(b) Solve $\operatorname{cosec}\left(y + \dfrac{\pi}{3}\right) = 2$ for $0 \leqslant y \leqslant 2\pi$ radians, giving your answers in terms of π. [4]

6. June/2020/Paper_12/No.10

(a) Solve $\tan 3x = -1$ for $-\frac{\pi}{2} \leqslant x \leqslant \frac{\pi}{2}$ radians, giving your answers in terms of π. [4]

(b) Use your answers to **part (a)** to sketch the graph of $y = 4\tan 3x + 4$ for $-\frac{\pi}{2} \leqslant x \leqslant \frac{\pi}{2}$ radians on the axes below. Show the coordinates of the points where the curve meets the axes.



[3]

7. June/2020/Paper_22/No.8

(a) Solve $3\cot^2 x - 14\operatorname{cosec} x - 2 = 0$ for $0° < x < 360°$. [5]

(b) Show that $\dfrac{\sin^4 y - \cos^4 y}{\cot y} = \tan y - 2\cos y \sin y$. [4]