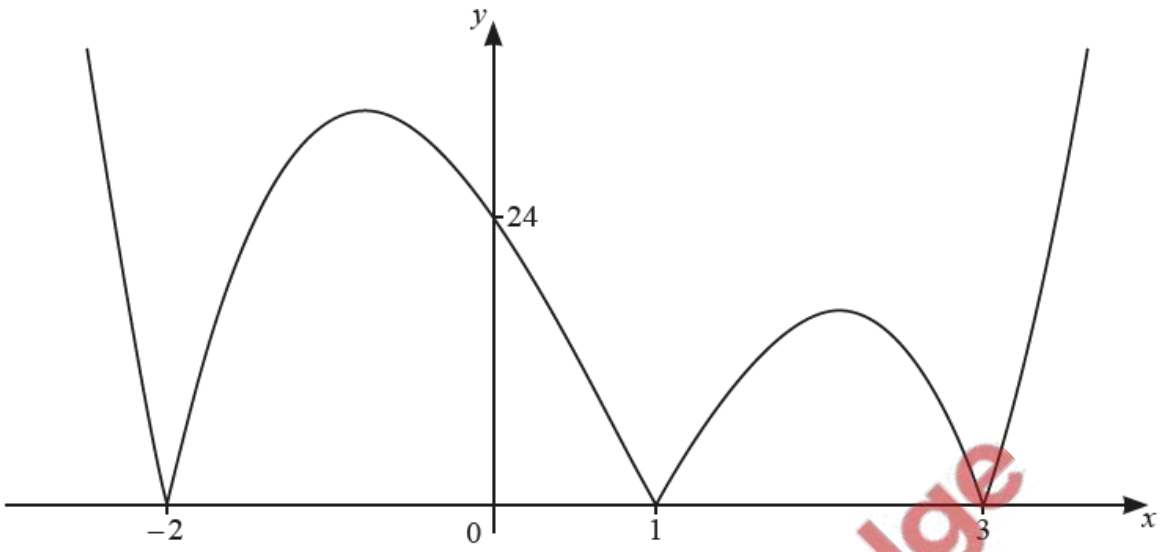
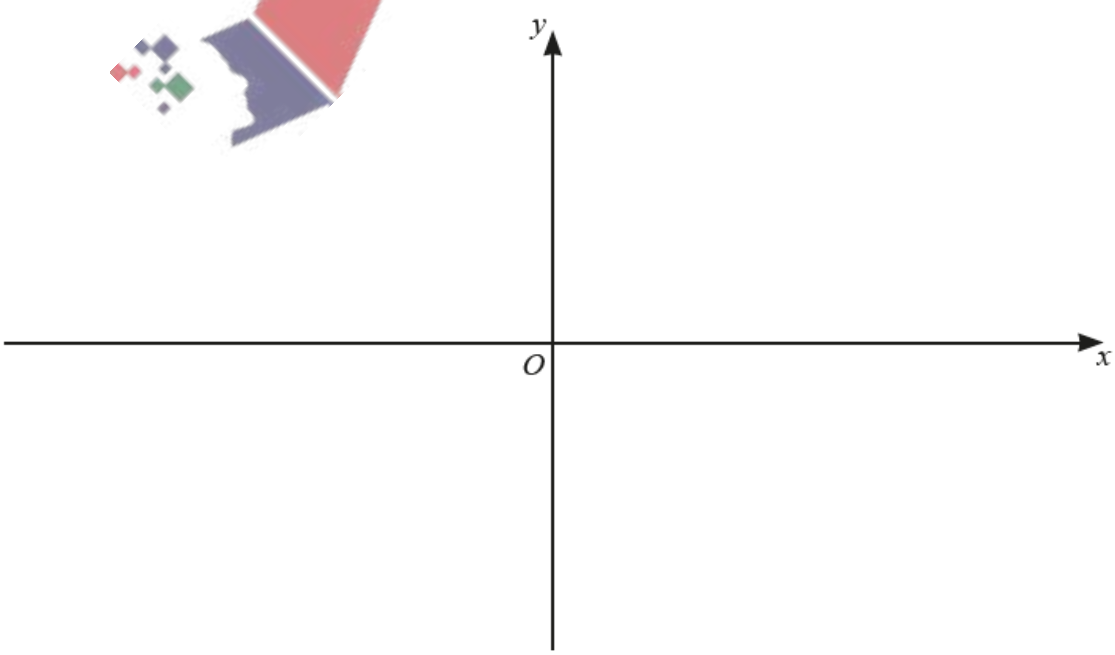
1. June/2022/Paper_11/No.4

(a)



The diagram shows the graph of $y = |f(x)|$, where $f(x)$ is a cubic. Find the possible expressions for $f(x)$. [3]

(b) (i) On the axes below, sketch the graph of $y = |2x+1|$ and the graph of $y = |4(x-1)|$, stating the coordinates of the points where the graphs meet the coordinate axes. [3]



(ii) Find the exact solutions of the equation $|2x+1| = |4(x-1)|$. [4]

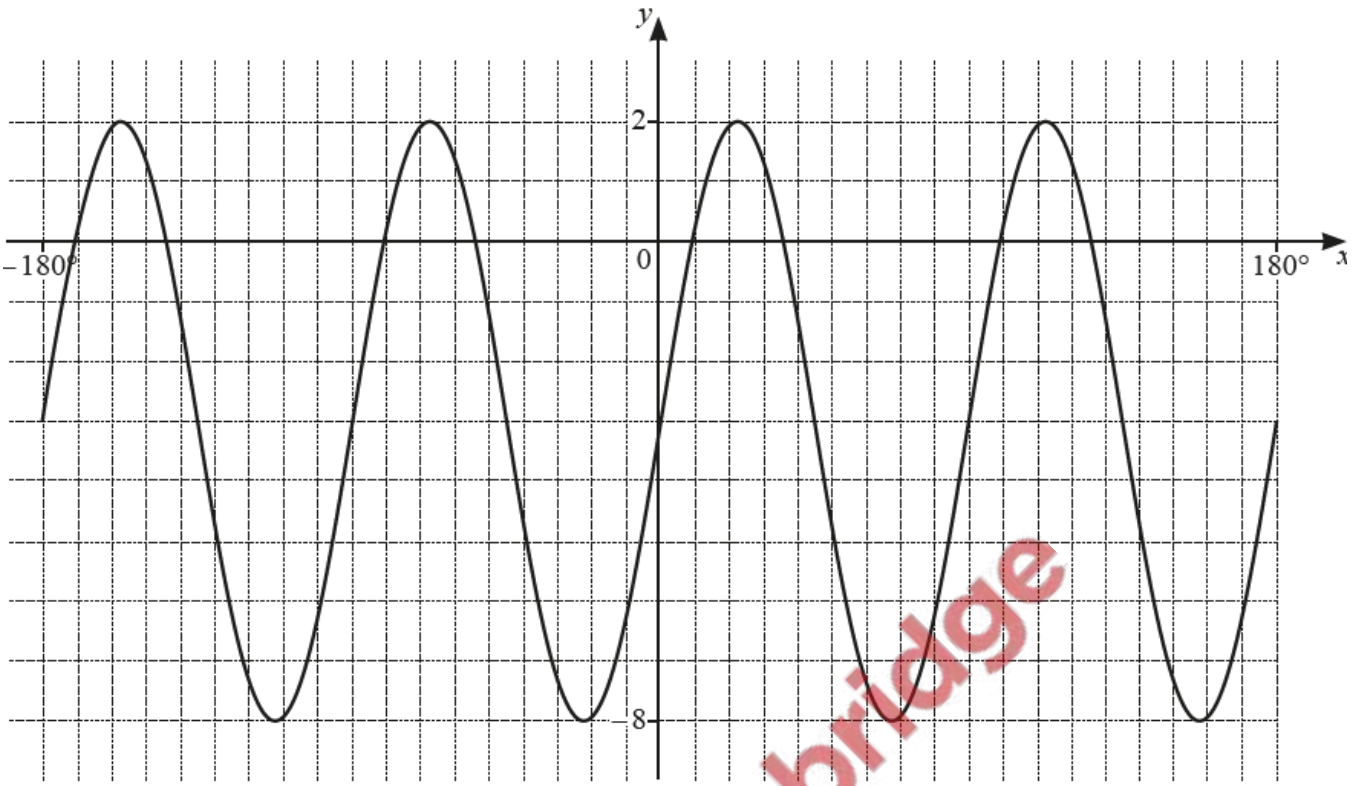
2. June/2022/Paper_11/No.6

(a) Write down the values of k for which the line $y = k$ is a tangent to the curve $y = 4\sin\left(x + \frac{\pi}{4}\right) + 10$.

[2]

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

3. June/2022/Paper_12/No.1



The diagram shows the graph of $y = a\sin bx + c$, where a, b and c are integers, for $-180° \leqslant x \leqslant 180°$. Find the values of a, b and c. [3]

4. June/2022/Paper_21/No.1

(a) Solve the equation $5^{w-1} = 12$, giving your answer correct to 2 decimal places. [2]

(b) Solve the equation $x^{\frac{2}{3}} - 5x^{\frac{1}{3}} + 6 = 0$. [3]

5. June/2022/Paper_22/No.5(b)

(b) On the axes, sketch the graph of $y = 4e^x + 3$ showing the values of any intercepts with coordinate axes.