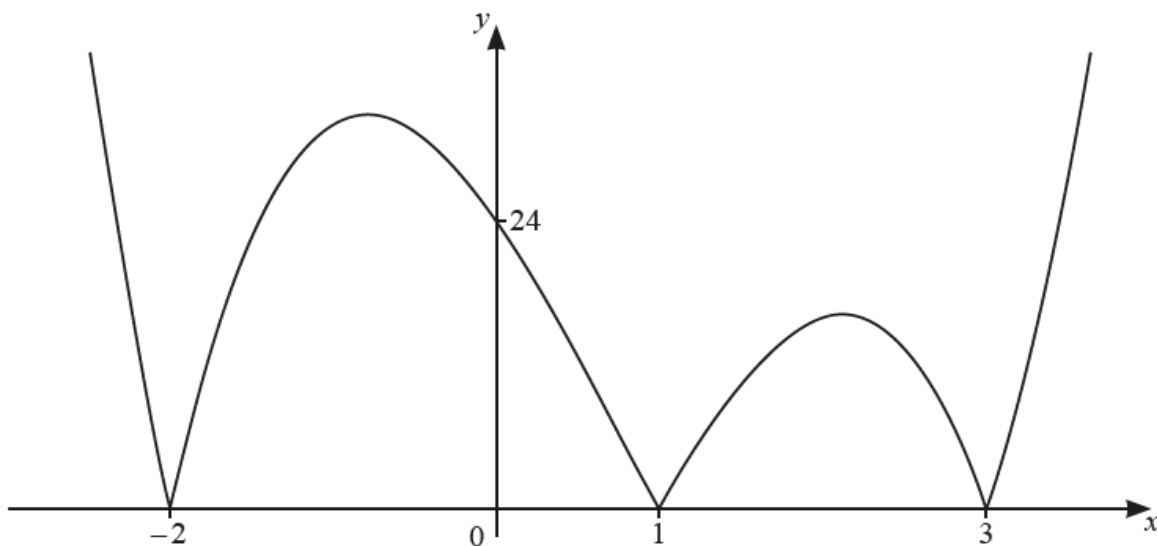


Equations, inequalities and graphs – 2022 O Level Additional Math

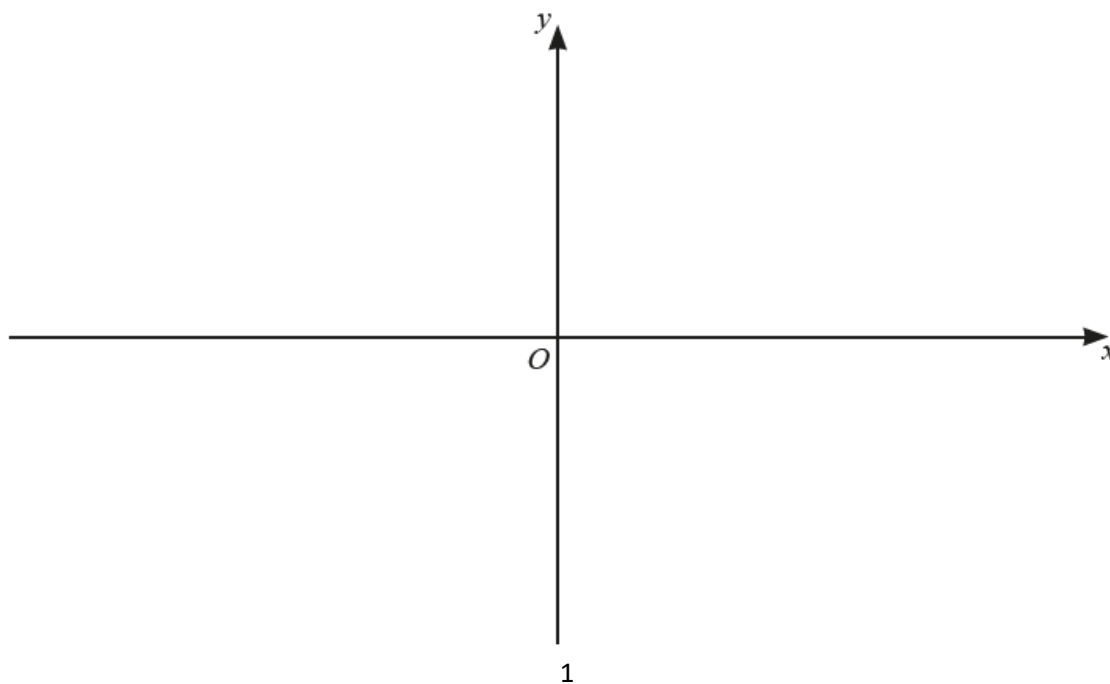
1. June/2022/Paper_11/No.4

(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]



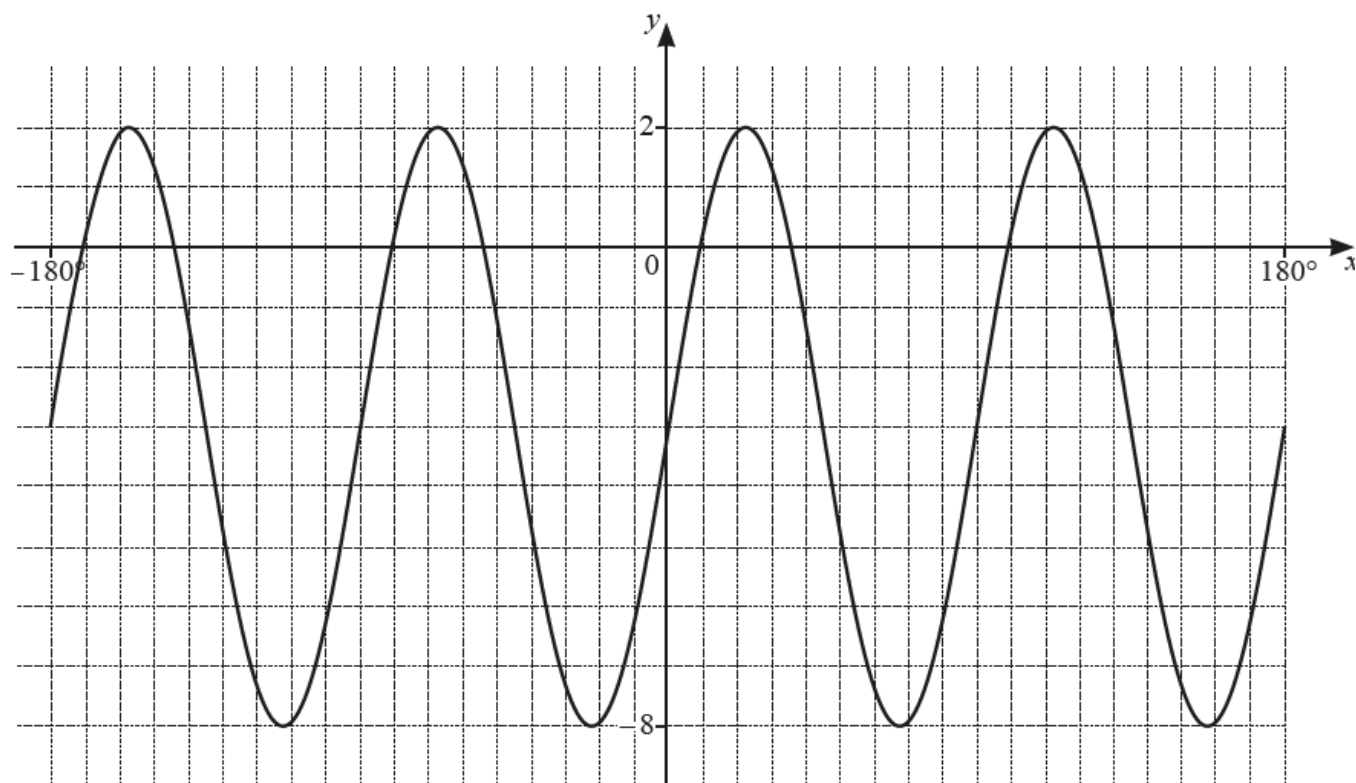
(ii) Find the exact solutions of the equation $|2x + 1| = |4(x - 1)|$. [4]

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 $-180^\circ \leq x \leq 180^\circ$. 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.

