Imię i nazwisko:
Klasa:
Grupa 1 i 2
Wynik:

Question 1 ***(1 pt)***
The graph of $f(x) = \sqrt{x}$ has been first translated by a vector $[-1, -1]$ and then reflected in the y-axis to form a graph of $g(x)$. The equation of $g(x)$ is given by:

A. $g(x) = \sqrt{-x-1} - 1$ B. $g(x) = \sqrt{-x+1} - 1$

C. $g(x) = -\sqrt{x+1} - 1$ D. $g(x) = -\sqrt{x+1} + 1$

Question 2 ***(1 pt)***
Consider a triangle ABC with $|AB| = 10$, $\angle ABC = 42°$ and $angleBAC = 93°$. The radius of the circle circumscribing this triangle is equal to:

A. $\frac{5\sqrt{2}}{2}$ B. 5 C. $5\sqrt{2}$ D. $10\sqrt{2}$

Question 3 ***(1 pt)***
Consider a parallelogram $ABCD$ with $A(3, 1), B(5, 5)$ and $D(2, 2)$. The coordinates of point C are:

A. $(4, 4)$ B. $(4, 5)$ C. $(4, 6)$ D. $(4, 7)$

Question 4 ***(1 pt)***
Point M with coordinates $(\sqrt{2}, 1)$ is the mid-point of the line segment AB, where $A(-3\sqrt{2}, -4)$. Point B has coordinates:

A. $(-5\sqrt{2}, -\frac{3}{2})$ B. $(-\sqrt{2}, -\frac{3}{2})$ C. $(\sqrt{2}, 2)$ D. $(5\sqrt{2}, 6)$

Question 5 ***(1 pt)***
A circle has been inscribed in a square $ABCD$ with vertices $A(-2, 4), B(6, 4)$ and $C(6, 12)$. The centre of the circle has coordinates:

A. $(2, 8)$ B. $(4, 8)$ C. $(2, 4)$ D. $(4, 4)$

Question 1 ***(1 pt)***

The graph of $f(x) = \sqrt{x}$ has been first translated by a vector $[-1, -1]$ and then reflected in the x-axis to form a graph of $g(x)$. The equation of $g(x)$ is given by:

A. $g(x) = \sqrt{-x-1} - 1$ B. $g(x) = \sqrt{-x+1} - 1$

C. $g(x) = -\sqrt{x+1} - 1$ D. $g(x) = -\sqrt{x+1} + 1$

Question 2 ***(1 pt)***

Consider a triangle ABC with $|AB| = 5$, $\angle ABC = 48°$ and $\angle BAC = 87°$. The radius of the circle circumscribing this triangle is equal to:

A. $\frac{5\sqrt{2}}{2}$ B. 5 C. $5\sqrt{2}$ D. $10\sqrt{2}$

Question 3 ***(1 pt)***

Consider a parallelogram $ABCD$ with $A(3, 0), B(5, 4)$ and $D(2, 1)$. The coordinates of point C are:

A. $(4, 4)$ B. $(4, 5)$ C. $(4, 6)$ D. $(4, 7)$

Question 4 ***(1 pt)***

Point M with coordinates $(-\sqrt{2}, -1)$ is the mid-point of the line segment AB, where $A(-3\sqrt{2}, -4)$. Point B has coordinates:

A. $(-5\sqrt{2}, -\frac{3}{2})$ B. $(-\sqrt{2}, -\frac{3}{2})$ C. $(\sqrt{2}, 2)$ D. $(5\sqrt{2}, 6)$

Question 5 ***(1 pt)***

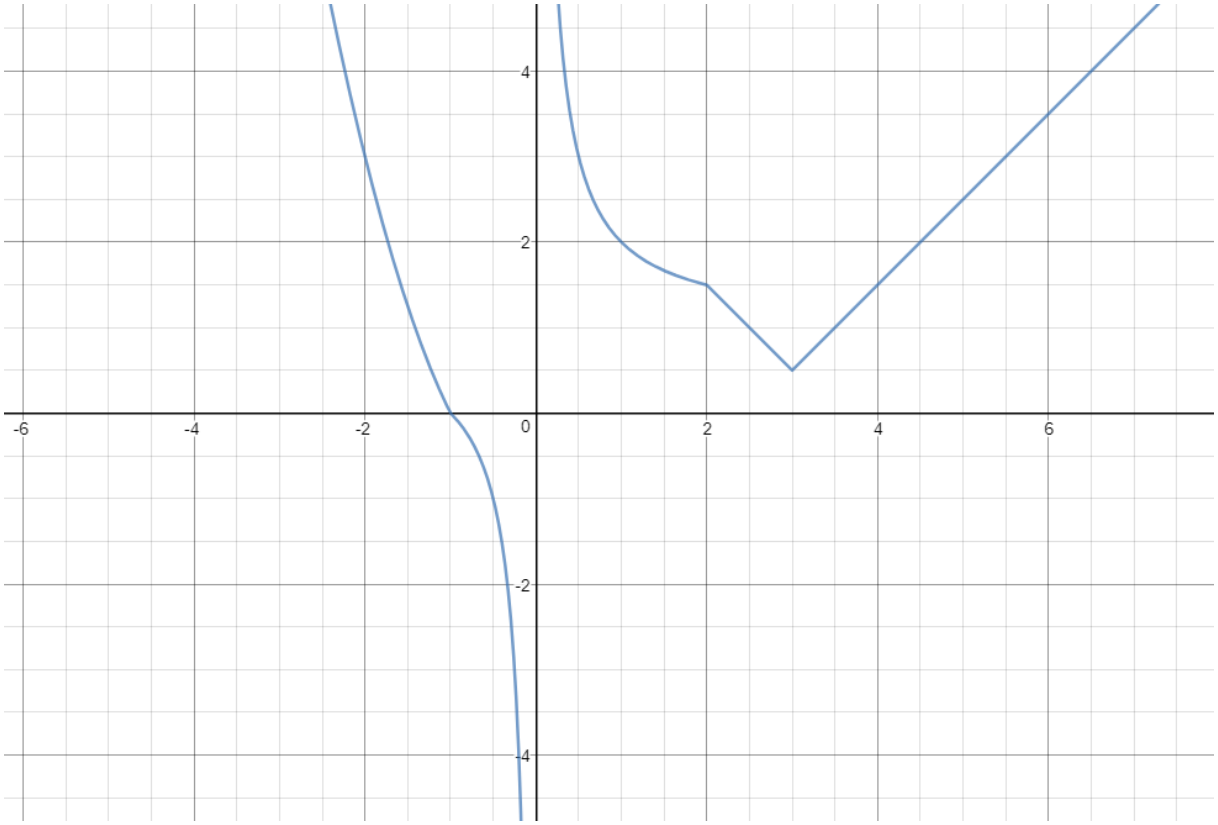
A circle has been inscribed in a square $ABCD$ with vertices $A(-2, 4), B(6, 4)$ and $C(6, 12)$. The centre of the circle has coordinates:

A. $(2, 8)$ B. $(4, 8)$ C. $(2, 4)$ D. $(4, 4)$

Question 10 ***(4 pts)***

Sketch the function

$$f(x) = \begin{cases} |x^2 - 1| & if \quad x < -1 \\ \frac{1}{x} + 1 & if \quad -1 \leqslant x < 2 \\ |x - 3| + \frac{1}{2} & if \quad x \geqslant 2 \end{cases}$$



Consider the equation:

$$f(x) = |\log_4(m - 3)|$$

Find the value(s) of m for which this equation has exactly 2 solutions.

Two solutions for $|\log_4(m - 3)| = \frac{1}{2}$

$\log_4(m - 3) = \frac{1}{2}$ or $\log_4(m - 3) = -\frac{1}{2}$.

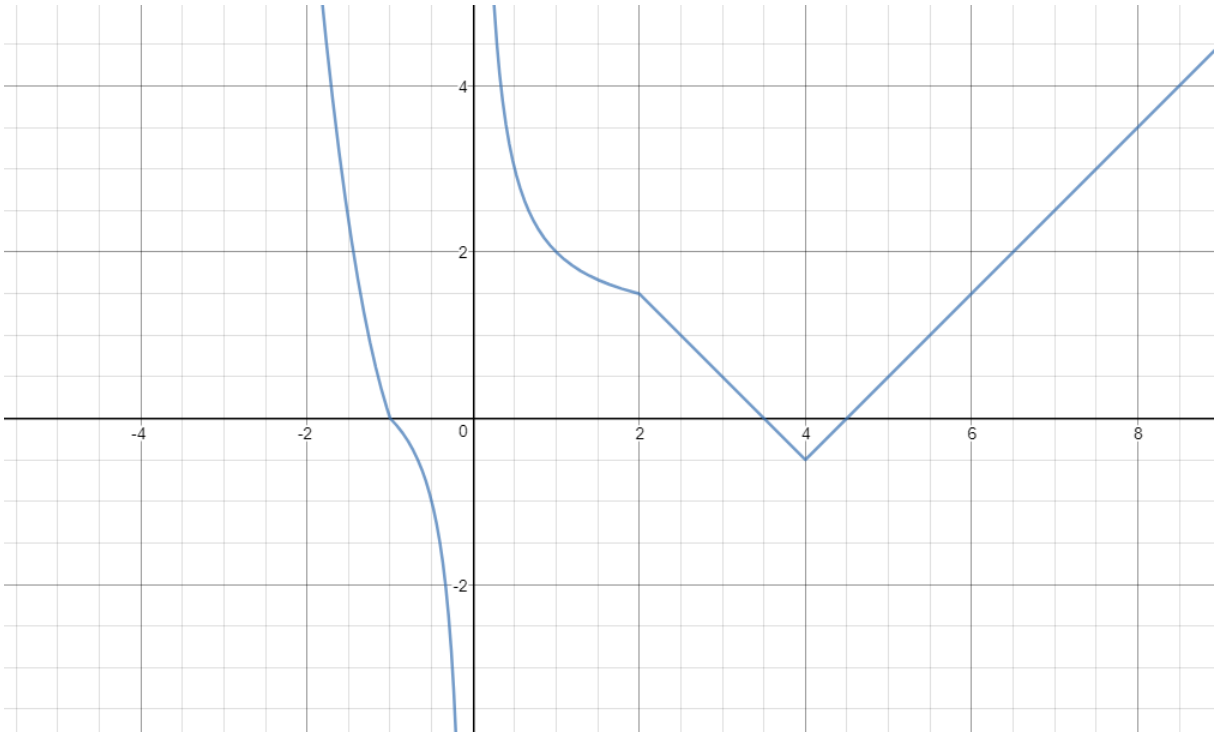
$m - 3 = 2$ or $m - 3 = \frac{1}{2}$.

$m = 5$ or $m = 3.5$.

Question 10 ***(4 pts)***

Sketch the function

$$f(x) = \begin{cases} |x^3 + 1| & if \quad x < -1 \\ \frac{1}{x} + 1 & if \quad -1 \leqslant x < 2 \\ |x - 4| - \frac{1}{2} & if \quad x \geqslant 2 \end{cases}$$



Consider the equation:

$$f(x) = \log_8(m - 1)$$

Find the value(s) of m for which this equation has exactly 2 solutions.

Two solutions for $\log_8(m-1) = -\frac{1}{2}$

$m - 1 = \frac{1}{2\sqrt{2}} = \frac{\sqrt{2}}{4}$

$m = 1 + \frac{\sqrt{2}}{4}$