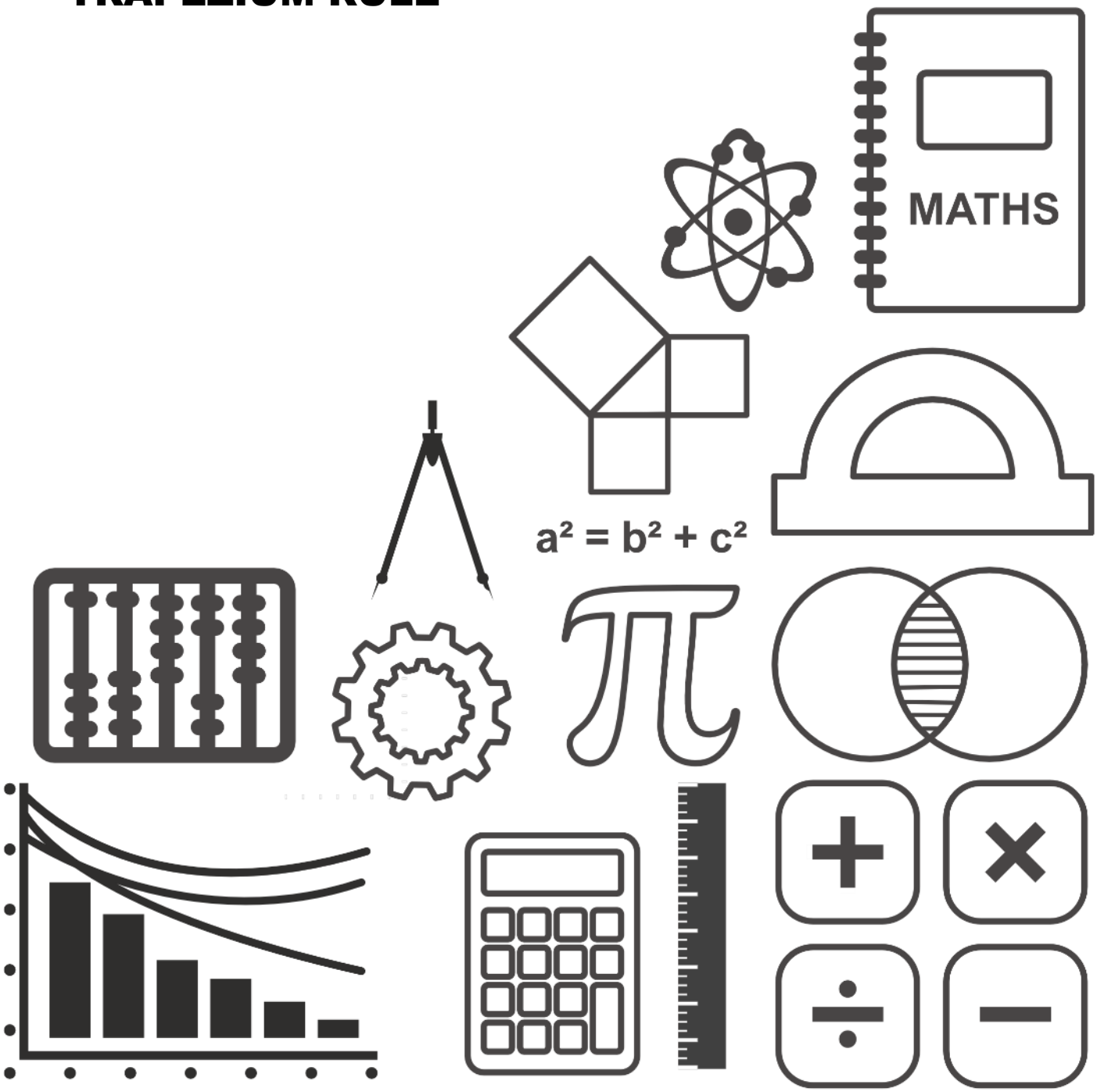
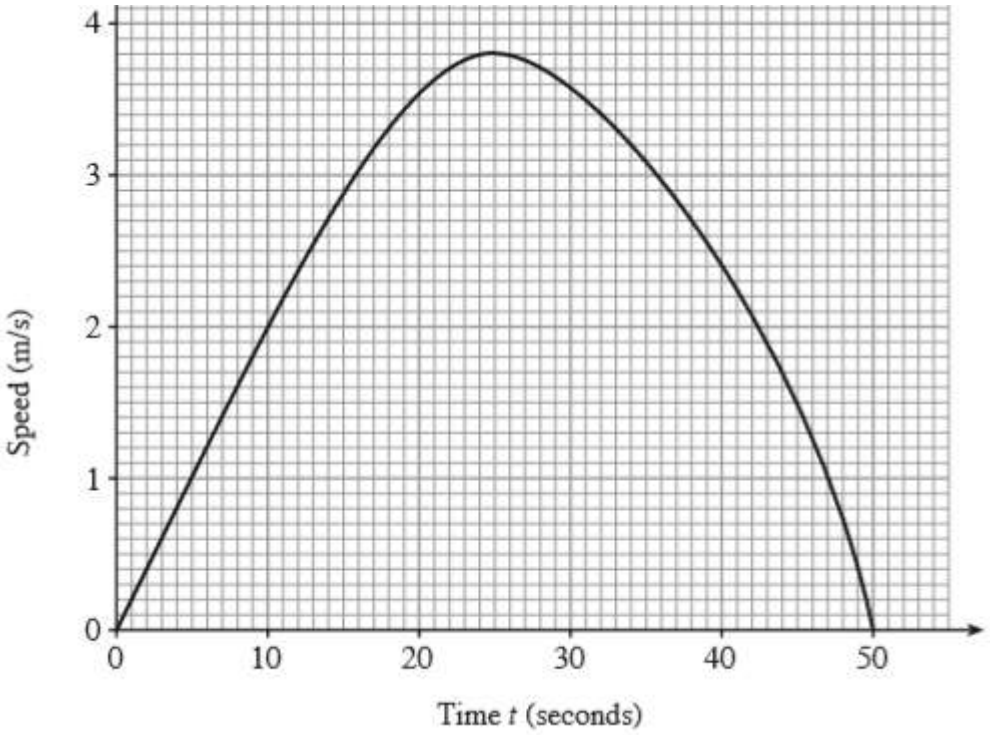
MATHSDIY

GCSE TOPIC BOOKLET
TRAPEZIUM RULE



1. The graph below shows the speed of a train, in m/s, over a period of 50 seconds starting at time $t = 0$ seconds.



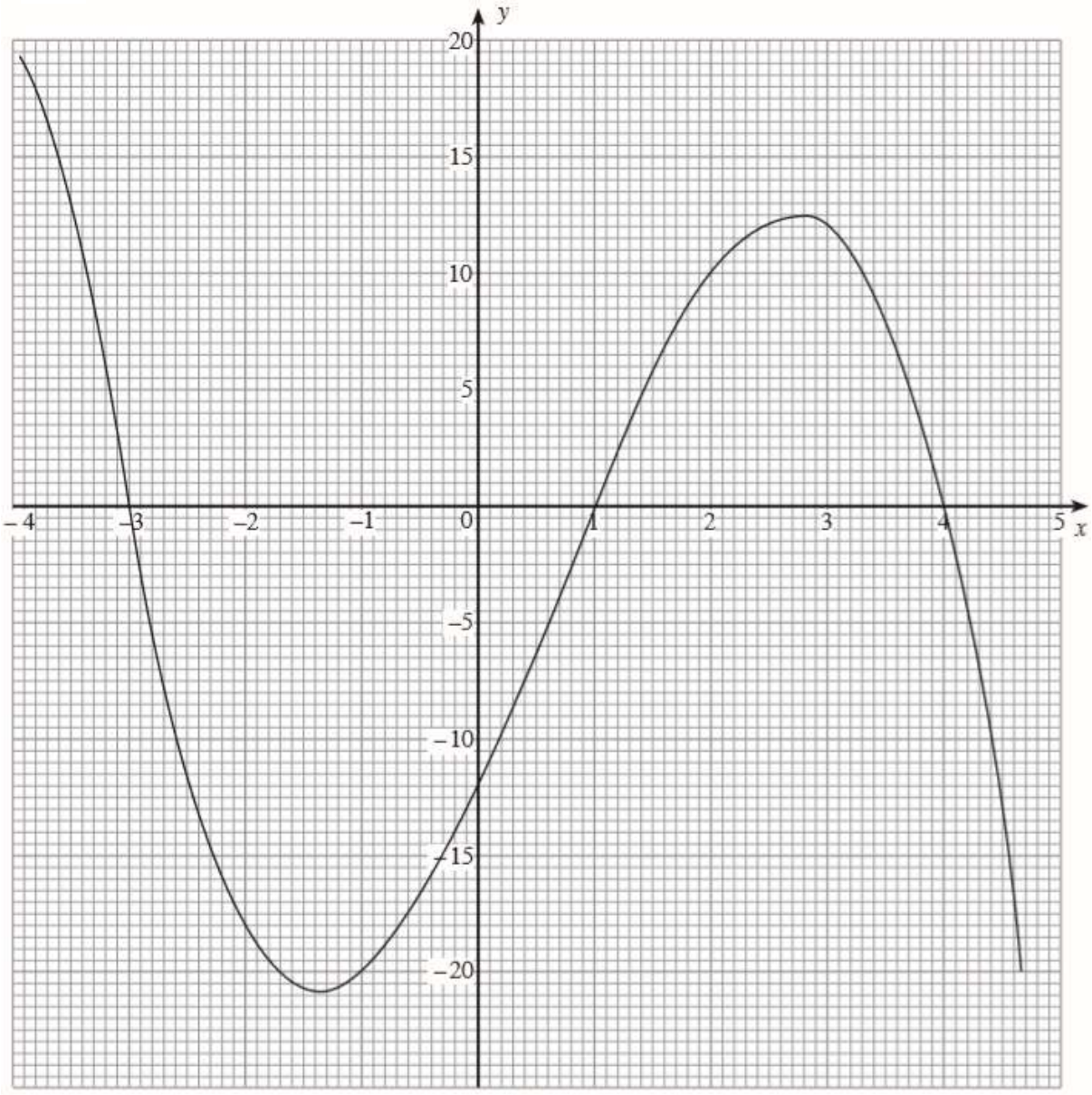
The table below gives the speed of the train between $t = 35$ and $t = 50$.

Time t (seconds)	35	40	45	50
Speed (m/s)	3·1	2·4	1·5	0

Use the trapezium rule with the values taken from the table to estimate the distance, in metres, travelled by the train between $t = 35$ and $t = 50$.

[3]

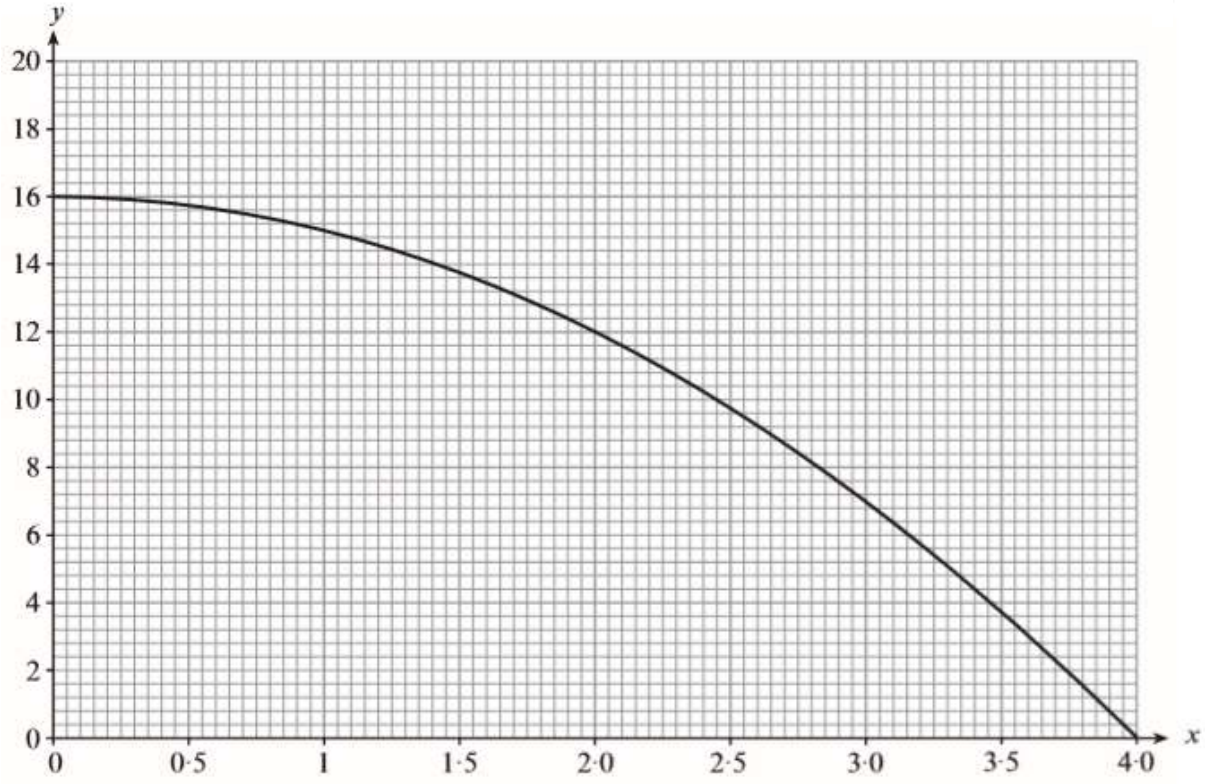
2. The graph of $y = -x^3 + 2x^2 + 11x - 12$ is shown below.



Use the trapezium rule, with ordinates $x = 1$, $x = 2$, $x = 3$ and $x = 4$, to find an estimate for the area of the region enclosed by the curve $y = -x^3 + 2x^2 + 11x - 12$ and the x-axis between the values $x = 1$ and $x = 4$.

[4]

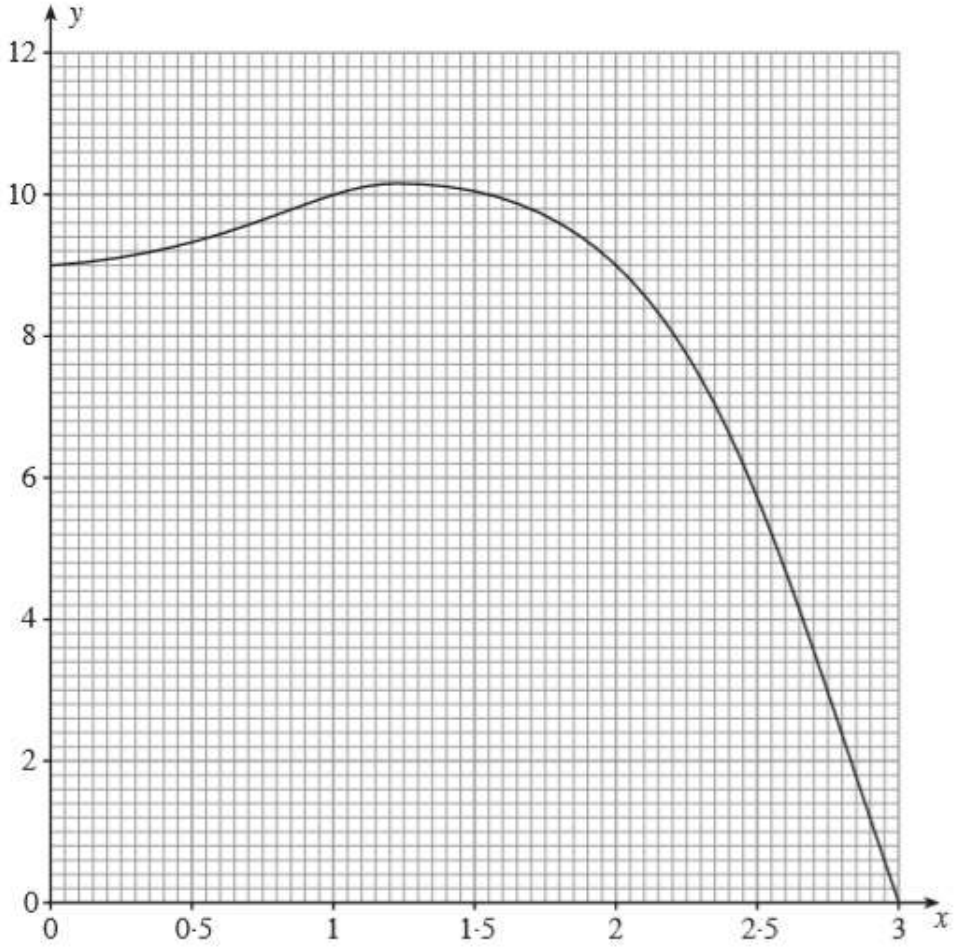
3. A sketch of $y = 16 - x^2$ is shown below for values of x from 0 to 4.



Use the trapezium rule, with the five ordinates $x = 0$, $x = 1$, $x = 2$, $x = 3$ and $x = 4$, to estimate the area of the region bounded by the curve, the x-axis and the y-axis.

[4]

4. A sketch of $y = 9 + 2x^2 - x^3$ is shown in the diagram below for values of x from $x = 0$ to $x = 3$.



The following table of values of $y = 9 + 2x^2 - x^3$ for $x = 0, 1, 2$ and 3.

x	0	1	2	3
y	9	10	9	0

Use the values from the table and the trapezium rule with three strips to calculate an estimate for the area of the region bounded by the curve, the x-axis and the y-axis.

.....

.....

.....

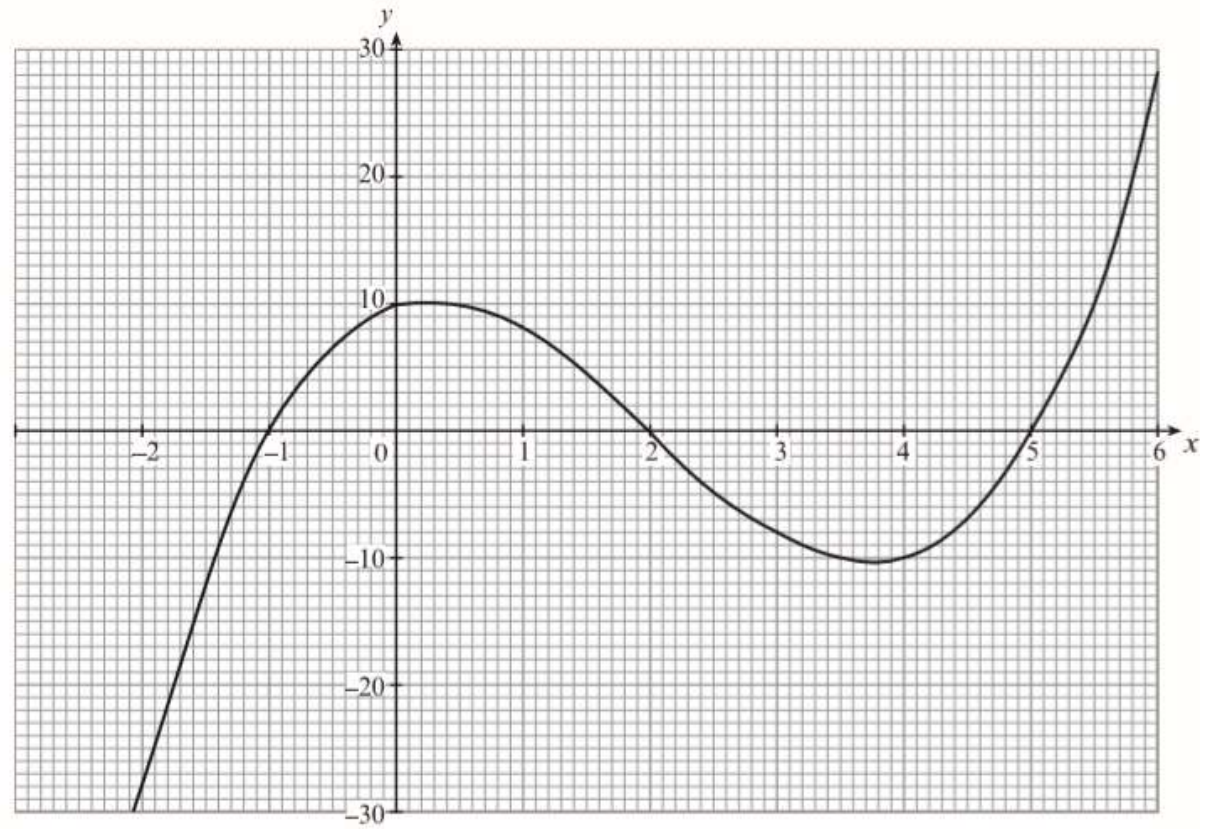
.....

.....

.....

[3]

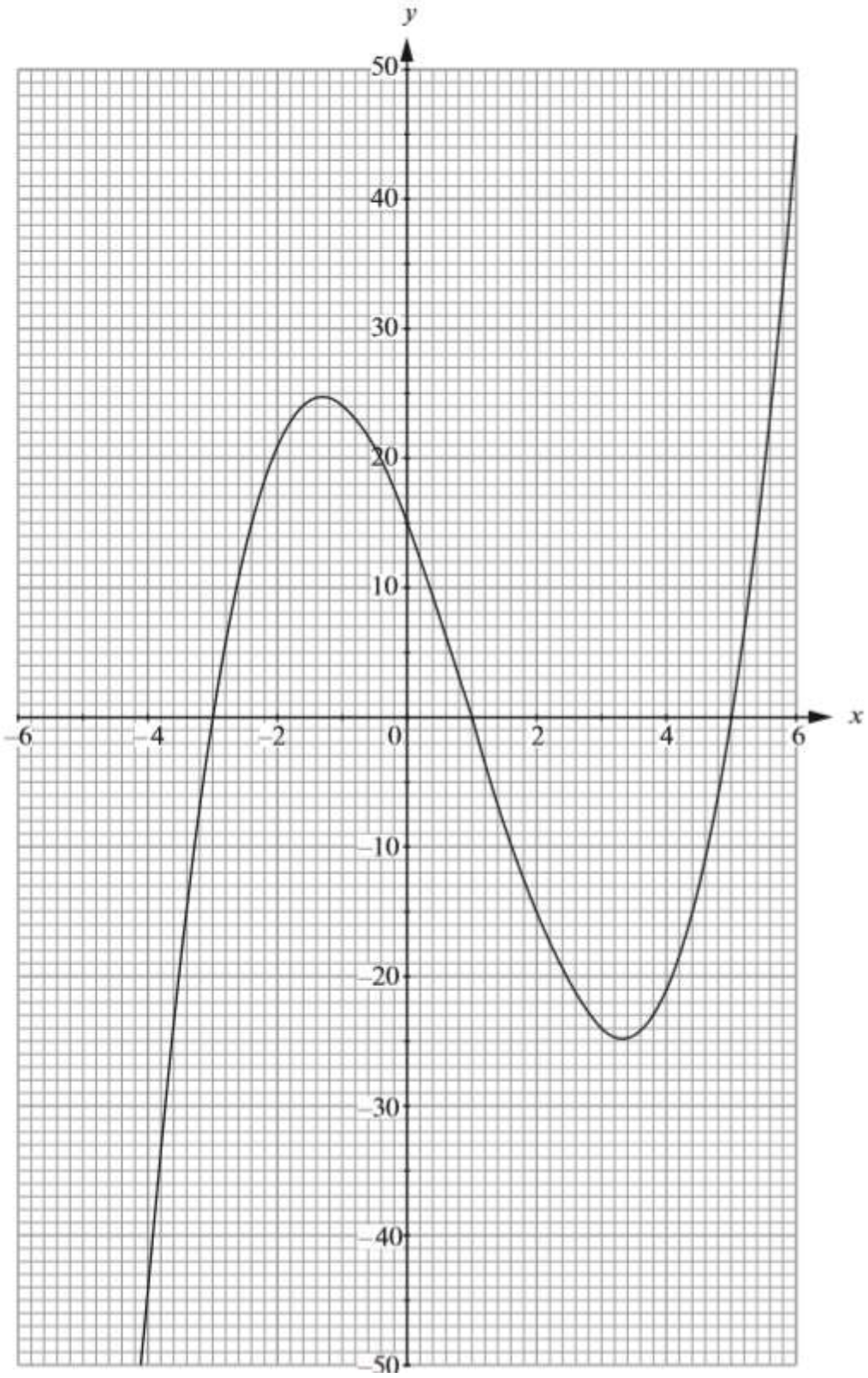
5. The graph of $y = x^3 - 6x^2 + 3x + 10$, for values of x between $x = -2$ and $x = 6$, is drawn below.



Use the trapezium rule with three strips of equal width to estimate the area of the region enclosed by the curve $y = x^3 - 6x^2 + 3x + 10$ and the x-axis between $x = -1$ and $x = 2$.

[4]

6. The graph of $y = x^3 - 3x^2 - 13x + 15$, for values of x between $x = -4$ and $x = 6$, has been drawn below.



Use the trapezium rule with 4 strips to estimate the area of the region enclosed by e curve $y = x^3 - 3x^2 - 13x + 15$ and the x-axis between $x = -3$ and $x = 1$.

[4]