

Algebraic Graphs

1) Draw up a table for each of the following equations:

(a) $y = x^2 - 3x - 5$ ($-2 \leq x \leq 5$)

(b) $y = 3 - 2x - x^2$ ($-4 \leq x \leq 2$)

Plot both of these graphs on the same axes.

2) Draw up a table for each of the following equations:

(a) $y = x^3 - 5x^2 - 4$ ($-3 \leq x \leq 6$)

(b) $y = 2 - 3x - x^3$ ($-3 \leq x \leq 3$)

Plot both of these graphs on the same axes.

3) Draw up a table for each of the following equations:

(a) $y = \frac{12}{x}$ ($x = -24, -12, -6, -5, -4, -3, -2, -1, -\frac{1}{2}, -\frac{1}{3}, 0$ then the same positive values)

(b) $y = \frac{-24}{x}$ (*same values as above*)

Plot both of these graphs on the same axes.

4) Use the graphs you have drawn in questions 1 and 2 to solve the following equations, giving solutions to 1 decimal place:

(a) $x^2 - 3x - 5 = 0$

(b) $3 - 2x - x^2 = 0$

(c) $x^3 - 5x^2 - 4 = 0$

(d) $2 - 3x - x^3 = 0$

5) Copy and complete the table below for the equation $y = \frac{12}{x} + x^2$

x	1	1.5	2	2.5	3	3.5	4	4.5	5
y									

(a) Hence draw the graph of this equation, taking a scale of 2cm to 1 unit on the x-axis, and 1 cm to 2 units on the y-axis.

(b) What is the minimum value of y, and what value of x gives this value of y?

6) (a) Draw the graph of $y = \frac{24}{x} + 3x$ for $1 \leq x \leq 8$, taking a scale of 2cm to 1 unit on the x-axis, and 1 cm to 1 unit on the y-axis.

(b) What is the minimum value of y, and what value of x gives this value of y?

(c) On the same axes, draw the graph of $y = x + 15$.

(d) For what values of x is $\frac{24}{x} + 3x = x + 15$?