

# Getting ready for A Level Maths

Week 4 – Graphs

# Week 4 - Graphs

1. Sketching graphs – Quadratics and Cubics
2. Solving equations with graphs
3. Translating graphs

# Sketching graphs – Quadratic and Cubics

Corbett maths – Further maths – link to video, worksheets and answers below:

[Link to video clip for sketching quadratics](#)

[Worksheet](#)

[Corbett maths sketching quadratics worksheet answers.pdf](#)

Edexcel resources – sketching cubic and reciprocal graphs

- Link to worksheet containing examples and questions.
- [Worksheet](#)

# Solving equations with graphs

Finding the intersection points of graphs is a method of solving pairs of equations.

Edexcel worksheet - examples and questions on the link below

[1c-3 Solving simultaneous equations graphically.docx](#)

# Translating graphs

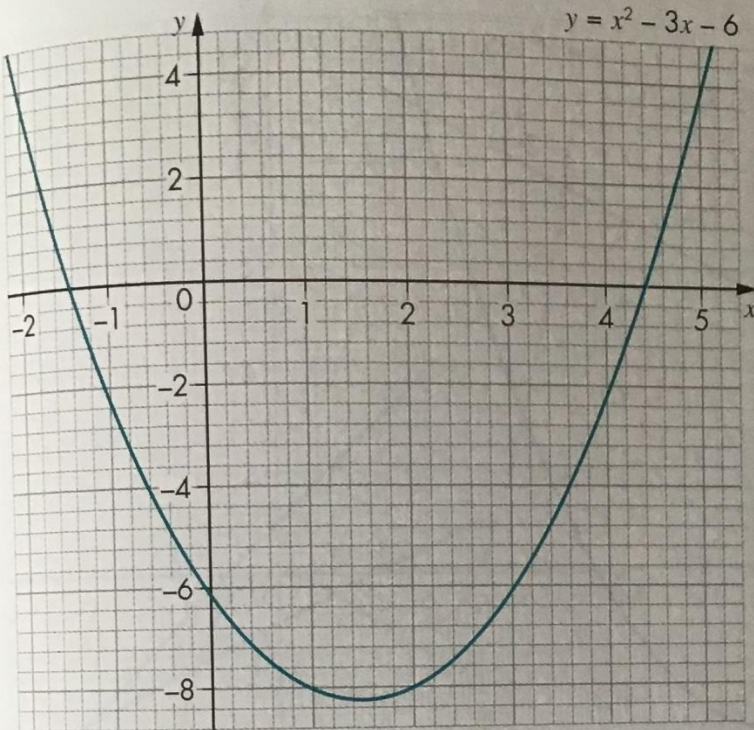
Translating graphs is covered in GCSE but you need to be fluent with this work for A level.

Edexcel worksheet with examples and questions (with answers attached).

[1f Translating graphs.docx](#)

# Further Maths GCSE Questions

1. Below is the graph of  $y = x^2 - 3x - 6$ .



a) Solve these equations.

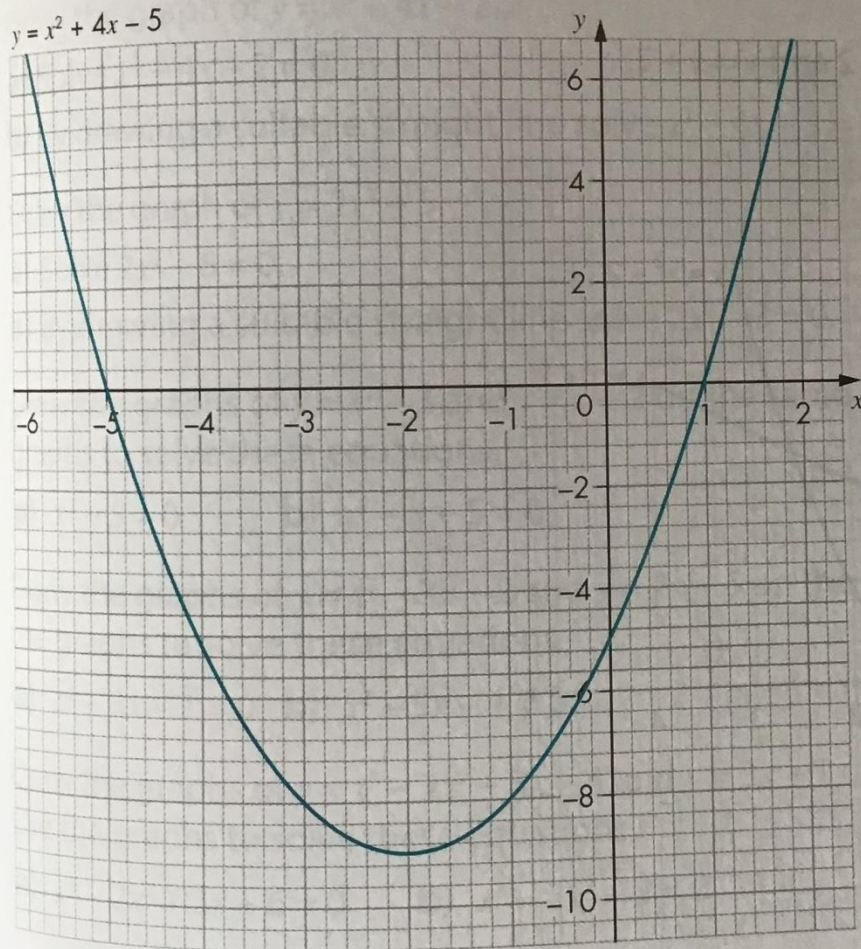
i)  $x^2 - 3x - 6 = 0$

ii)  $x^2 - 3x - 6 = 4$

iii)  $x^2 - 3x - 2 = 0$

b) By drawing a suitable straight line solve  $2x^2 - 6x + 2 = 0$ .

2. Below is the graph of  $y = x^2 + 4x - 5$ .



a) Solve  $x^2 + 4x - 5 = 0$ .

b) By drawing suitable straight lines solve these equations.

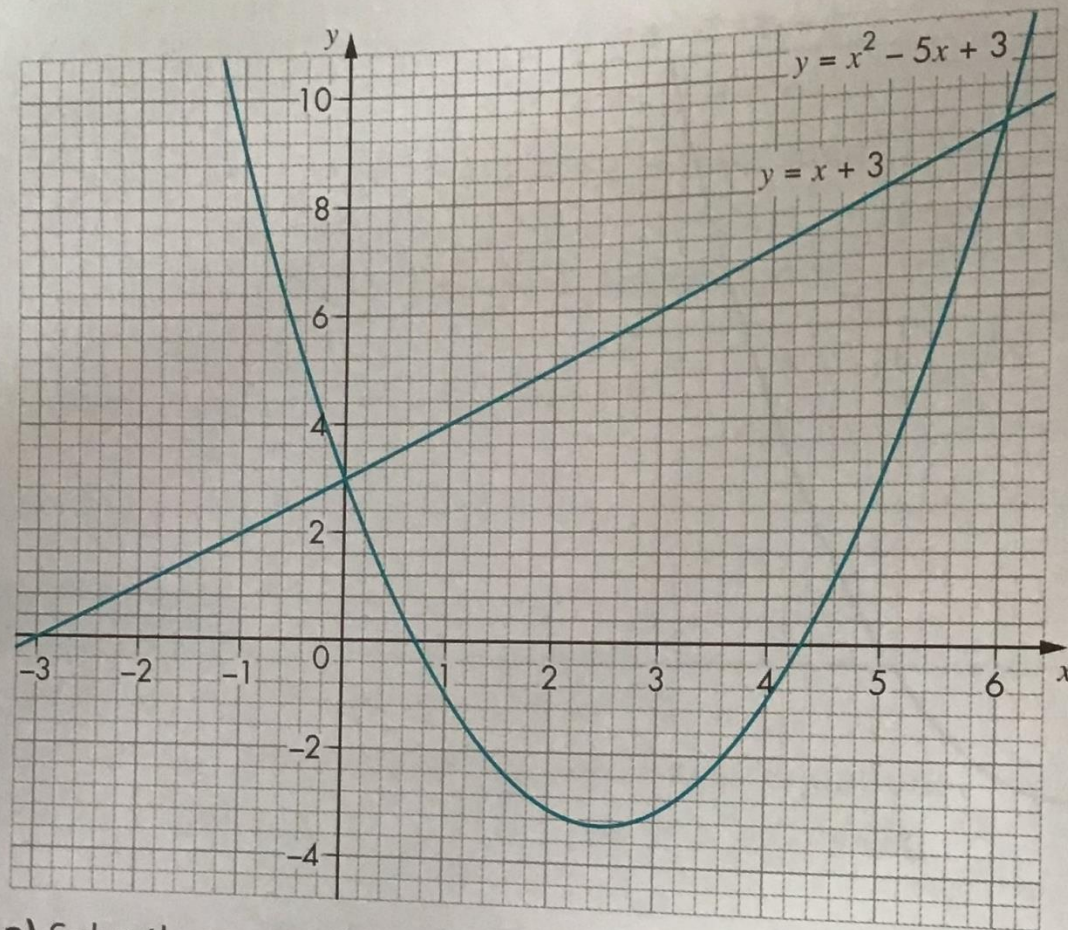
i)  $x^2 + 4x - 5 = 2$

ii)  $x^2 + 4x - 4 = 0$

iii)  $3x^2 + 12x + 6 = 0$



3. Below are the graphs of  $y = x^2 - 5x + 3$  and  $y = x + 3$ .



a) Solve these equations.

i)  $x^2 - 6x = 0$

ii)  $x^2 - 5x + 3 = 0$

b) By drawing suitable straight lines solve these equations.

i)  $x^2 - 5x + 3 = 2$

ii)  $x^2 - 5x - 2 = 0$

4. Below are the



# Further Maths GCSE answers

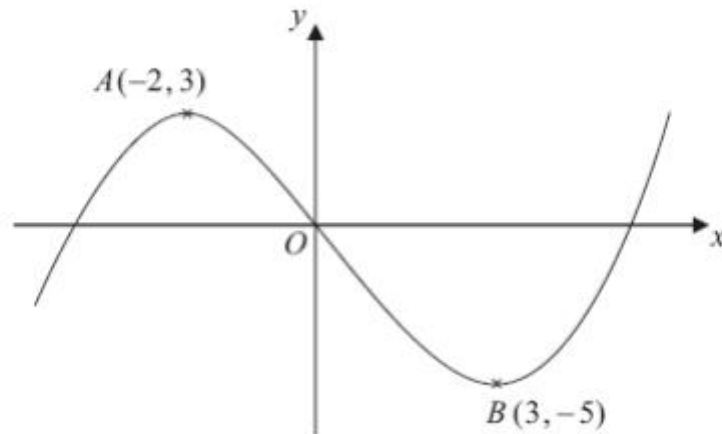
## 11.5 Solving equations by the method of intersection

### Exercise 11E

1. a) i  $-1.4, 4.4$     ii  $-2, 5$     iii  $-0.6, 3.6$     b)  $2.6, 0.4$
2. a)  $-5, 1$     b) i  $-5.3, 1.3$     ii  $-4.8, 0.8$     iii  $-3.4, -0.6$
3. a) i  $0, 6$     ii  $4.3, 0.7$     b) i  $4.8, 0.2$     ii  $5.4, -0.4$

# A Level Questions

1.



The diagram above shows a sketch of the curve with equation  $y = f(x)$ . The curve has a maximum point  $A$  at  $(-2, 3)$  and a minimum point  $B$  at  $(3, -5)$ .

On separate diagrams sketch the curve with equation

(a)  $y = f(x + 3)$

**(3)**

(b)  $y = 2f(x)$

**(3)**

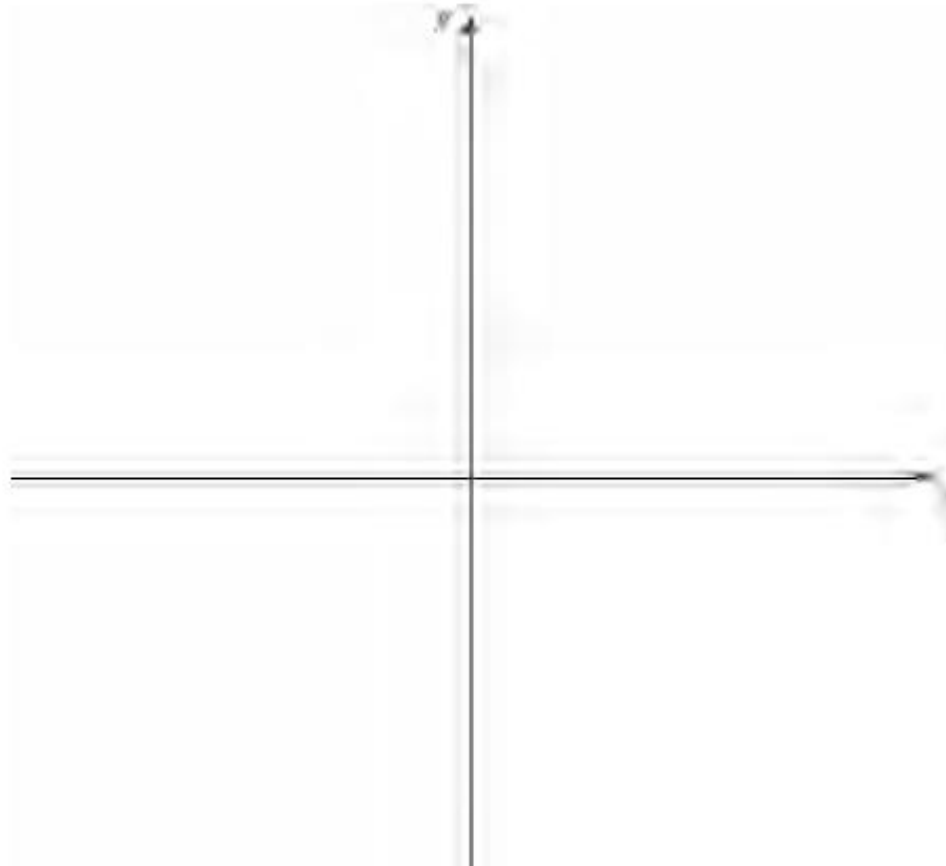
On each diagram show clearly the coordinates of the maximum and minimum points.

2. (a) On the axes below sketch the graphs of

(i)  $y = x(4 - x)$

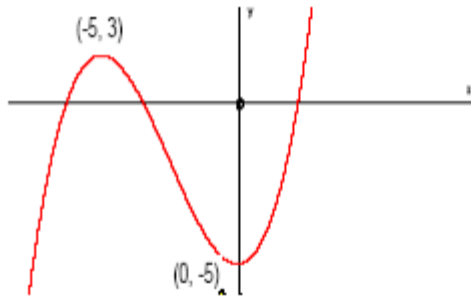
(ii)  $y = x^2(7 - x)$

showing clearly the coordinates of the points where the curves cross the coordinate axes.



# A Level Questions - Answers

1. (a)



Horizontal translation of  $\pm 3$

$(-5, 3)$  marked on sketch **or in text**

$(0, -5)$  and min intentionally on  $y$ -axis

Condone  $(-5, 0)$  if correctly placed on negative  $y$ -axis

M1

B1

A1 3

(b)



Correct shape and intentionally through  $(0, 0)$  between the max and min B1

$(-2, 6)$  marked on graph **or in text**

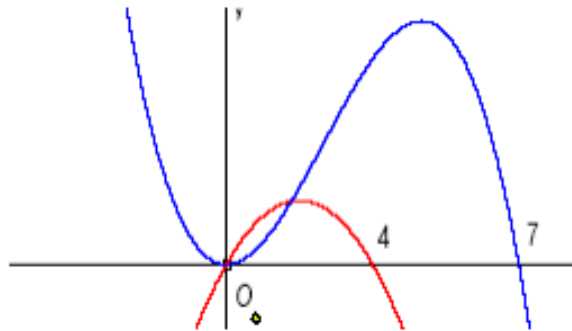
B1

$(3, -10)$  marked on graph **or in text**

B1 3

# A Level Questions - Answers

2. (a)



- (i)  $\cap$  shape (anywhere on diagram) B1  
 Passing through or stopping at  $(0, 0)$  and  $(4, 0)$  B1  
 only (Needn't be  $\cap$  shape)
- (ii) correct shape (-ve cubic) with a max and min drawn anywhere B1  
 Minimum or maximum at  $(0, 0)$  B1  
 Passes through or stops at  $(7, 0)$  but NOT touching. B1 5  
 $(7, 0)$  should be to right of  $(4, 0)$  or B0  
 Condone  $(0, 4)$  or  $(0, 7)$  marked correctly on  $x$ -axis.  
 Don't penalise poor overlap near origin.  
**Points must be marked on the sketch...not in the text**