

Quadratic Models

Checklist

Use this space to keep track of your progress with this subtopic. Print and file this document together with those from different sub-topics in a file for quick reference.

Task	Complete (tick or cross)	Traffic Light (Red, amber or green)
Watch the video tutorials		
Check you know your calculators skills		
Review the slides		
Review/annotate the flashcards		
Complete the quiz		
Complete the exam style questions		
Check your solutions against the solution videos		
Review any remaining areas you need to.		

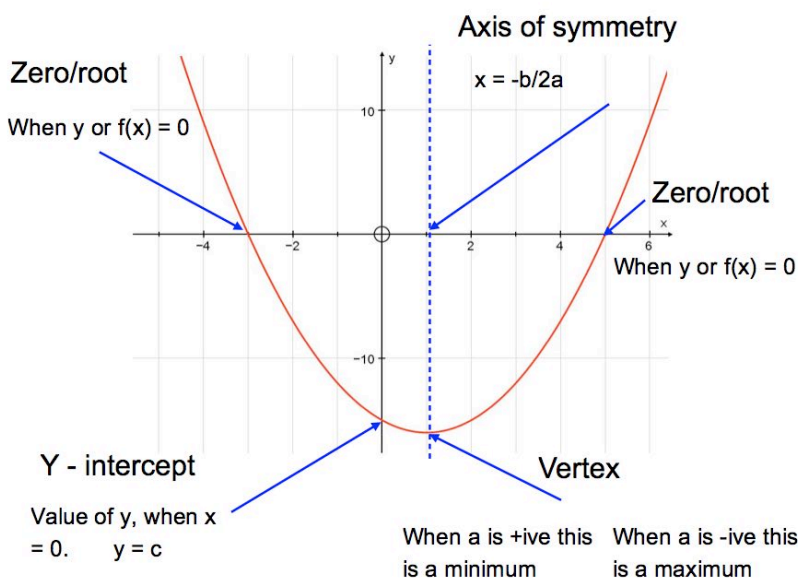
Flashcards



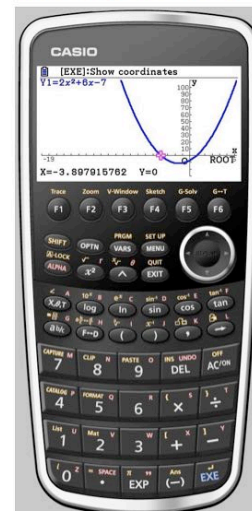
Quadratic Models

Flash Cards

$$y = f(x) = ax^2 + bx + c$$



Know your GDC!



Enter functions
Use tables
Tableset
Find zeros/roots
Find Vertex (max min)

Exam Style Questions

Complete these questions on paper and then check your solutions against the video solutions on the website.

Question 1

For the following question, consider that $f(x) = x^2 - 7x + 12$

- Find the coordinates of the points where the graph of $f(x)$ intersects the x - axis
- What are the coordinates of the point where $f(x)$ intersects the y – axis?
- Find the coordinates of the vertex for $f(x)$

Write answers here

Working.....

(a) _____

(b) _____

(c) _____

(6marks)



Question 2

For the following question, consider that $g(x) = 2x^2 + 13x - 7$

- Find the equation of the axis of symmetry for $g(x)$
- What is the minimum value of $g(x)$

The line $f(x) = -7$, intersects $g(x)$ at 2 points, One of those intersections is at $(0, -7)$

- Find the coordinates of the other intersection

Write answers here

Working.....

(a) _____

(b) _____

(c) _____

(6marks)



Question 3

A rectangle has dimensions $(3 + 2x)$ metres and $(9 - 2x)$ metres

- a) Show that the area, A of the rectangle is $A = 27 + 12x - 4x^2$ (2 marks)
- b) The following is the table of values for the function $A = 27 + 12x - 4x^2$

x	-2	-1	0	1	2	3	4	5
A	r	11	s	35	35	27	t	-13

- i) Calculate the values of r , s and t (3 marks)
- ii) Use a scale of 1cm for 1 unit on the x – axis and 1cm for 5 units on the A – axis and plot the points. Join them up to draw the quadratic curve. (4 marks)
- iii) Use your graph to work out the area of the rectangle when $x = 2.5$ (2 marks)
- c) Show that the axis of symmetry is $x = 1.5$ and draw this on the axis. (2 marks)
- d) Use the axis of symmetry to work out the value of the maximum area of the rectangle. (2 marks)
- e) What are the dimensions of the rectangle with the maximum area? (2 marks)

Total (17 marks)

