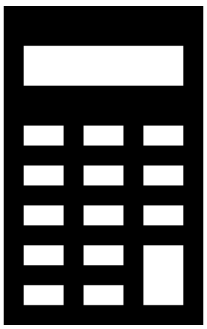
AQA, OCR, Edexcel

GCSE

GCSE Maths

Turning Points of Quadratic Graphs

Name:



Guidance

1. Read each question carefully.
2. Don't spend too long on each question.
3. Attempt every question.
4. Always show your workings.

Revise GCSE Maths:
www.MathsMadeEasy.co.uk/gcse-maths-revision/

1. Define the turning point of a quadratic graph.

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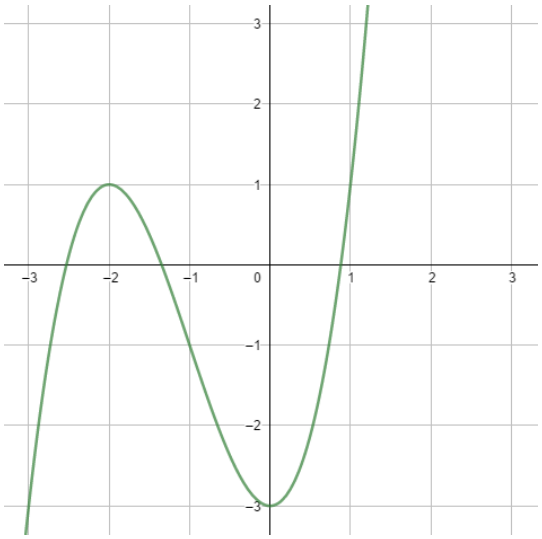
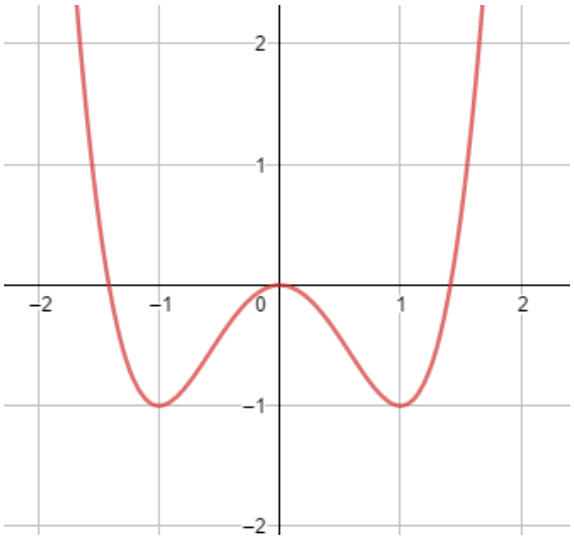
(1 mark)

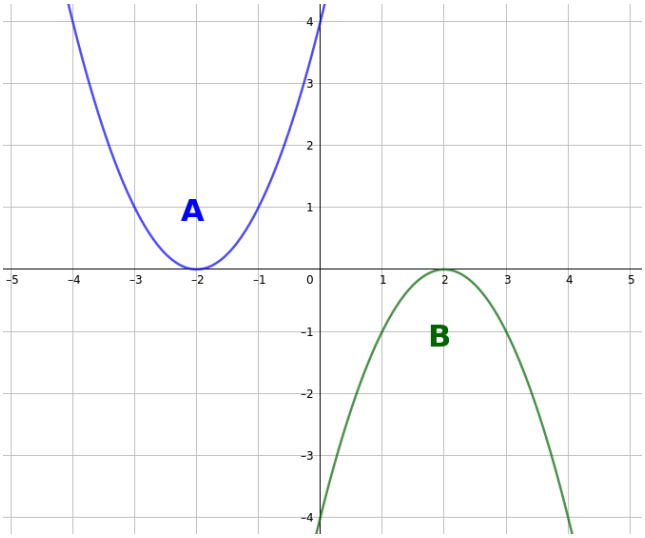
2. Circle the turning points of the two graphs below.





(2 marks)

3. Circle the turning points on the two quadratic graphs below.



Belle looks at graph A and says, “The turning point is always the minimum point of any quadratic graph”
Comment on her statement.

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(2 marks)

4. Find the turning point of the following equations by completing the square.

$y = x^2 + 4x + 7$

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..... $x =$ ..... , $y =$ .....

$y = 3x^2 + 36x + 99$

.....

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.....

.....

..... $x =$ ..... , $y =$ .....

$y = 2x^2 + 7x - 10$

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..... $x =$ ..... , $y =$ .....

(8 marks)

5. Two points on a quadratic curve $f(x)$ are $(0,23)$ and $(8,23)$.
Given that $f(4) = 7$, what is the minimum point on the curve?
You must give your reasoning.

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…… $x =$ …… , $y =$ ……

(3 marks)

6. By writing $y = 2x^2 + 2x - 2$ as $y = 2x(x + 2) - 2$ find two symmetrical points on y.
Hence find the turning point of the curve.

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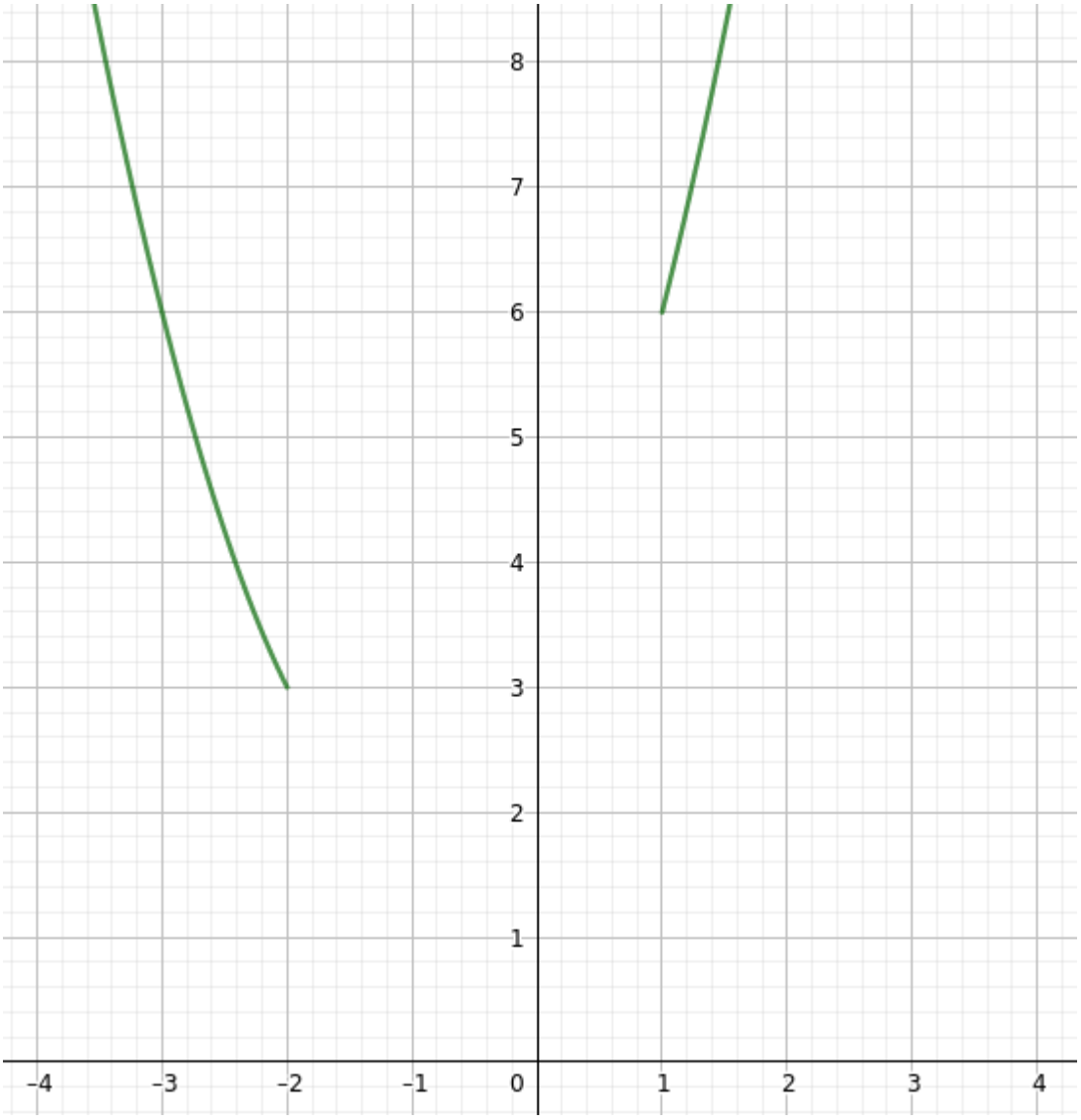
…… $x =$ …… , $y =$ ……

(1)

7. The graph below shows a quadratic function with the region between $-2 \leq x < 1$ missing.
   Find the line of symmetry of the quadratic and use this to plot the rest of the curve.



What are the coordinates of the turning point of the curve?

$x =$ ..... , $y =$ .....

(3 marks)

8. Given that:

$$f(x) = x - 4$$
$$g(x) = x^2$$

Find $fg(x)$ and $gf(x)$.

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Find the turning point of each curve and comment on them with relation to $f(x)$.

$fg(x)$: ……

……

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…… $x =$ …… , $y =$ ……

$gf(x)$: ……

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……

…… $x =$ …… , $y =$ ……

Comment: ……

……

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(5 marks)