

Name	Date started	Target end date
------	--------------	-----------------

WJEC Level 2 Additional Mathematics – Question Pack

Using definite integration to find the area between a curve and the x-axis (and areas bounded by a line).

REVISE
.wales

Area under a curve

Calculus · Level 2 Certificate (9550) · calculator allowed

Using definite integration to find the area between a curve and the x-axis (and areas bounded by a line).

LEVEL 2 · 9550

Estimated time for entire question pack: ~1 hours 7 minutes

At the Additional Maths pace of ~1.2 min/mark (56 marks across 10 questions).

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. It gathers every question on this topic from the 2011–2024 papers.

Questions are ordered by year, newest first.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working – method marks are awarded for clear setup.

A calculator is allowed throughout this qualification.

All question content is © WJEC CBAC Ltd. and reproduced for revision purposes only.

Area under a curve – what's examined

WJEC Level 2 Additional Mathematics (9550) · single written paper, calculator allowed.

Area by integration Calculus

- Area = definite integral between the limits.
- Limits are the x-values of the region.
- Integrate then substitute.

Finding limits Calculus

- Limits often come from where the curve meets the axis or a line.
- Solve to find them.
- Use the correct order.

Care points Method

- Areas below the axis come out negative – interpret carefully.
- Subtract a line's area if needed.
- Show the integration.

Area under a curve in one page

Quick-reference notes – revisit before each question. Don't use during the questions.

Area under a curve

$$A = \int_a^b y \, dx$$

Finding the limits

Set $y = 0$ (axis) or curve = line, and solve for the x-values.

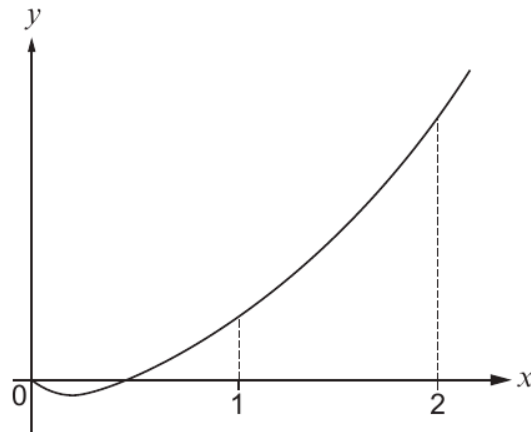
Below the axis

A region under the x-axis gives a **negative** integral; take its size for area.

Between curve & line

Integrate (top - bottom) between their intersection points.

10. The diagram below shows a sketch of the curve $y = 18x^2 - 3x$.



Calculate the area of the region bounded by:

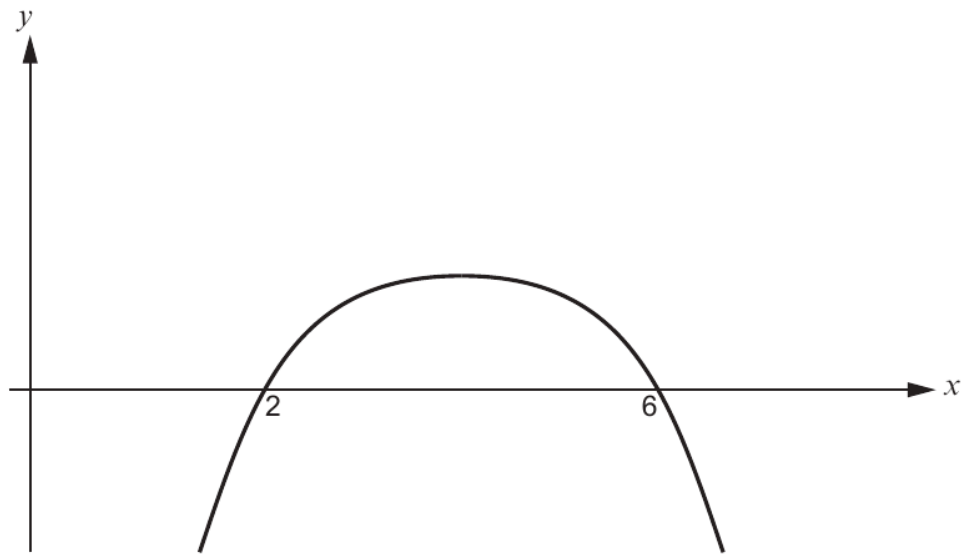
- the curve $y = 18x^2 - 3x$,
- the line $x = 1$,
- the line $x = 2$,
- the x -axis.

You must show all your working.

[5]



16. A sketch of the curve $y = -x^2 + 8x - 12$ is shown below.



Calculate the area of the region bounded by the curve $y = -x^2 + 8x - 12$ and the x -axis.
You must show all your working.

[5]

.....

.....

.....

.....

.....

.....

.....

.....

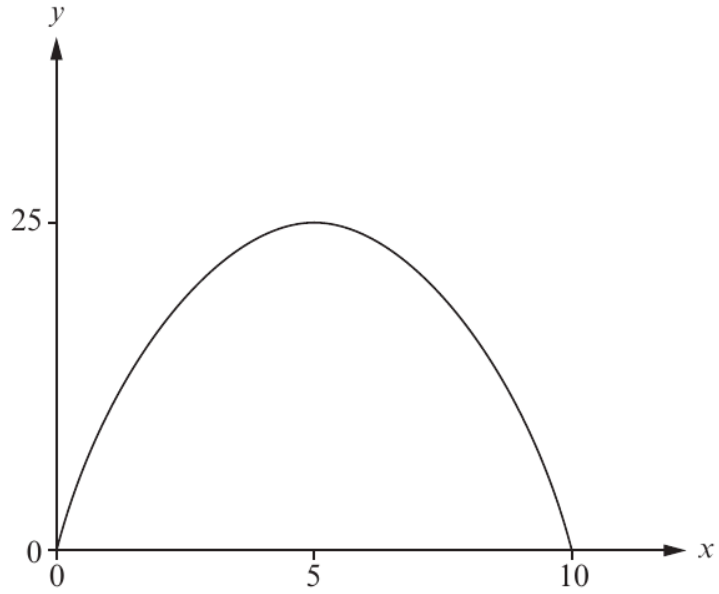
.....

.....

.....

END OF PAPER

11. The diagram shows the curve $y = 10x - x^2$.



Showing all your working, calculate the area of the region bounded by the curve $y = 10x - x^2$ and the x -axis.

.....

.....

.....

.....

.....

.....

.....

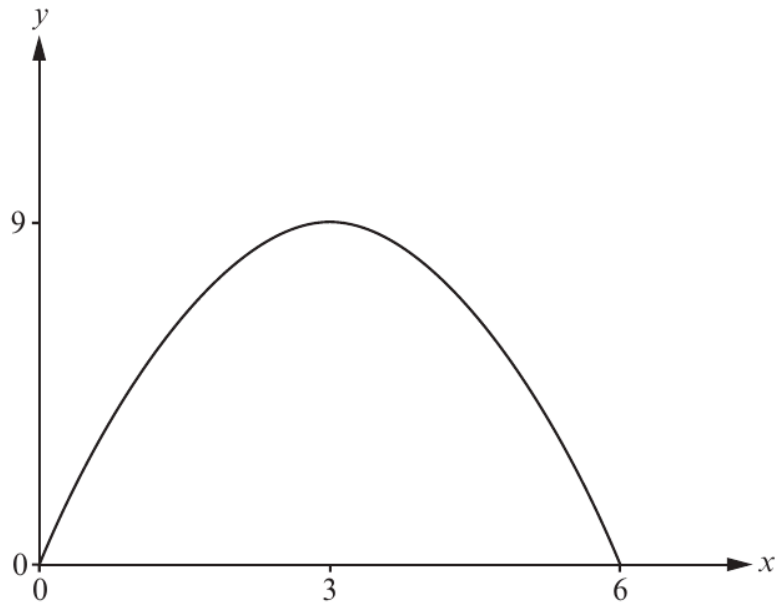
.....

.....

.....

[5]

12. The diagram shows the curve $y = 6x - x^2$.



Showing all your working, calculate the area of the region bounded by the curve $y = 6x - x^2$ and the x -axis.

.....

.....

.....

.....

.....

.....

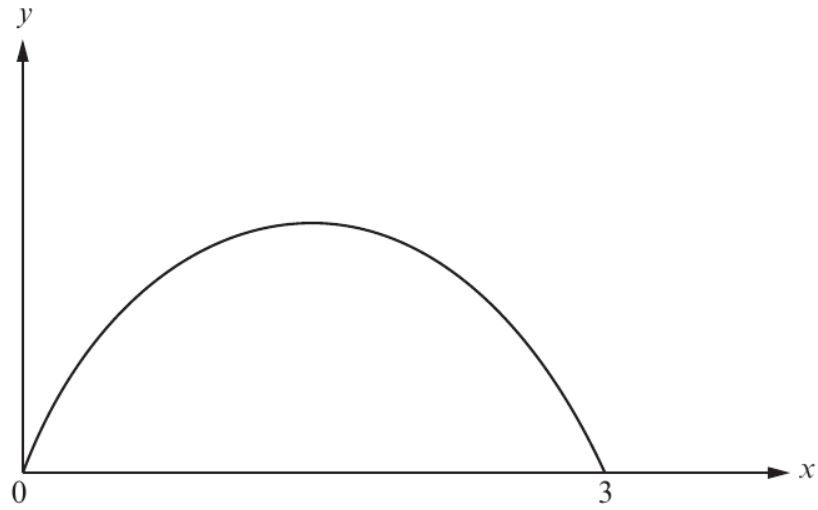
.....

.....

.....

[5]

12. The diagram shows a sketch of the curve $y = 3x - x^2$.



Calculate the area of the region bounded by the curve $y = 3x - x^2$ and the x -axis.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[5]

End of question pack