

A Level Maths

Sketching Curves Whodunnit?

One of the following people has murdered one of the others.
Test your knowledge of sketching quadratics to solve the crime.

- Each person has made 3 statements.
- The murderer has made 3 errors and the victim has made 0 errors.
- The other suspects have made 1 or 2 errors.



Suspects

A
SUSPECT

- $y = x^2 - 2x - 8$ crosses the x axis at $x = -2$ and $x = 4$
- $y = 8 - 2x - x^2$ is u shaped
- $y = x^2 + 4x - 21$ has a y intercept at 21

B
SUSPECT

- $y = x^2 + 4x - 21$ crosses the x axis at $x = -3$ and $x = 7$
- $y = 8 - 2x - x^2$ is n shaped
- $y = x^2 - 2x - 8$ has a y intercept at -8

C
SUSPECT

- The vertex of $y = x^2 - 2x - 8$ is at $(-1, -9)$
- $y = 2x^2 - 4x + 3$ crosses the x axis at $x = 1$ and $x = 3$
- $y = 8 - 2x - x^2$ crosses the x axis at $x = -2$ or $x = 4$

D
SUSPECT

- $y = x^2 + 4x - 21$ crosses the x axis at $x = -7$ and $x = 3$
- The vertex of $y = 2x^2 - 4x + 3$ is at $(2, -13)$
- $y = x^2 + 4x - 21$ has a y intercept at -21

A Level Maths Lesson Element



- The vertex of $y = 2x^2 - 4x + 3$ is at $(-2, -13)$
- $y = 2x^2 - 4x + 3$ does not cross the x axis
- $y = x^2 - 2x - 8$ has a line of symmetry at $x = -1$



- The vertex of $y = x^2 - 2x - 8$ is at $(1, -9)$
- $y = 2x^2 - 4x + 3$ has a line of symmetry at $x = 1$
- The vertex of $y = x^2 + 4x - 21$ is at $(-2, -25)$

Where?

The murder took place at the point in the first quadrant where $y = 2x^2 + 5x - 3$ and $y = 3 + 2x - x^2$ intersect.

When?

The following clues give the time and date that the murder took place.
E.g. hours answer = 17, minutes answer = 28, would give a time of 17:28.

The hours part of the time is the minimum value of $y = x^2 + 4x + 7$

The minutes part of the time is the maximum value of $y = 21 - 4x - x^2$

The day part of the date is the maximum value of $y = 10 + 6x - x^2$

The month part of the date is the x intercept of $y = 3x^2 - 18x + 27$

Accusation

I think that murdered..... at the co-ordinates

The murder took place at (time) on the (day) of (month).