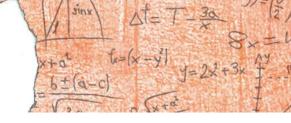


## A Level Maths Lesson Element



## **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**



- $y = x^2 2x 8$  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



- $y = x^2 + 4x 21$  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



- 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



- $y = x^2 + 4x 21$  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





- 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).