

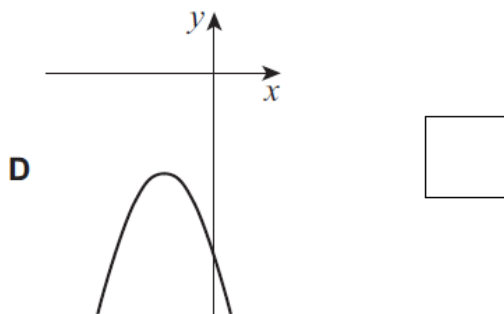
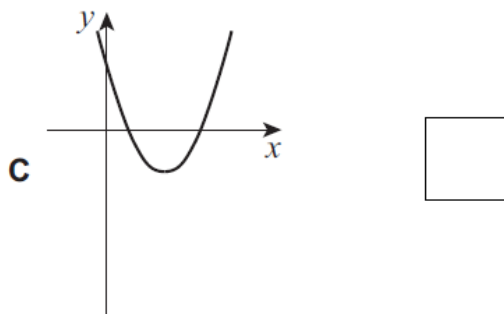
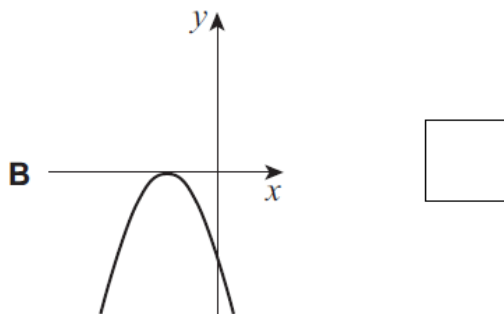
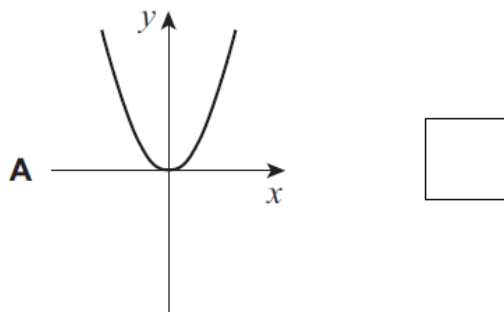
**AQA – Algebra functions – A2 Mathematics P2****1. June/2021/Paper\_7357/2/No.1**

Four possible sketches of  $y = ax^2 + bx + c$  are shown below.

Given  $b^2 - 4ac = 0$  and  $a$ ,  $b$  and  $c$  are non-zero constants, which sketch is the only one that could possibly be correct?

Tick (✓) **one** box.

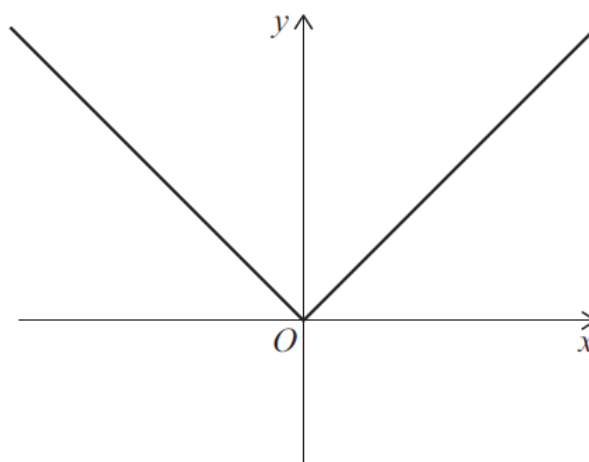
[1 mark]



2. June/2021/Paper\_7357/2/No.4

Figure 1 shows the graph of  $y = |2x|$

Figure 1



(a) On Figure 1 add a sketch of the graph of

$$y = |3x - 6|$$

[2 marks]

(b) Find the coordinates of the points of intersection of the two graphs.

Fully justify your answer.

[4 marks]

3. June/2021/Paper\_7357/2/No.5

Express

$$\frac{5(x-3)}{(2x-11)(4-3x)}$$

in the form

$$\frac{A}{(2x-11)} + \frac{B}{(4-3x)}$$

where  $A$  and  $B$  are integers.

[3 marks]

## 4. June/2021/Paper\_7357/2/No.10

The function  $h$  is defined by

$$h(x) = \frac{\sqrt{x}}{x-3}$$

where  $h$  has its maximum possible domain.

(a) Find the domain of  $h$ .

Give your answer using set notation.

[3 marks]

(b) Alice correctly calculates

$$h(1) = -0.5 \quad \text{and} \quad h(4) = 2$$

She then argues that since there is a change of sign there must be a value of  $x$  in the interval  $1 < x < 4$  that gives  $h(x) = 0$

Explain the error in Alice's argument.

[2 marks]

(c) By considering any turning points of  $h$ , determine whether  $h$  has an inverse function.

Fully justify your answer.

**[6 marks]**