

Advanced Higher Maths
SQA 2021 Paper 1
Question 7



A function is defined on a suitable domain by $f(x) = \frac{x^2}{x-2}$.

- (a) For the graph of $y = f(x)$
- (i) state the equation of the vertical asymptote 1
 - (ii) find the equation of the non-vertical asymptote.
Justify your answer. 2

The turning points on the graph are $(0, 0)$ and $(4, 8)$.

There are no other stationary points.

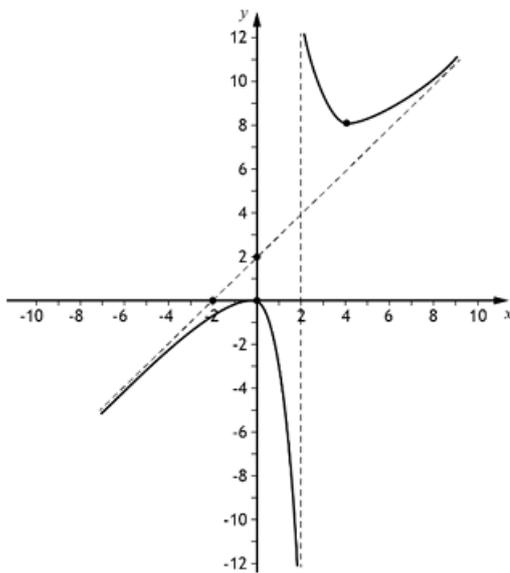
- (b) On the diagram provided, sketch the graph of $y = f(x)$. 1
- (c) (i) On the diagram provided, sketch the graph of $y = |f(x)|$.
Show all asymptotes. 1
- (ii) State the values of k for which $|f(x)| = k$ has exactly two distinct solutions. 1
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Answers:

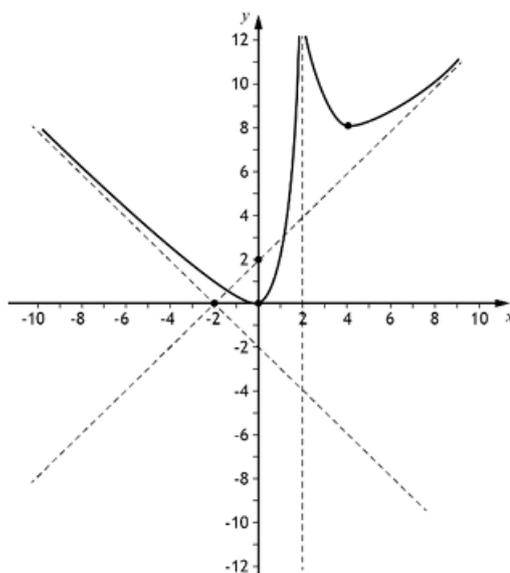
(a) (i) $x = 2$

(ii) $y = x + 2$

(b)



(c) (i)



(ii) $0 < k < 8$