

Year 13

Functions Revision Session

5-6pm

1)

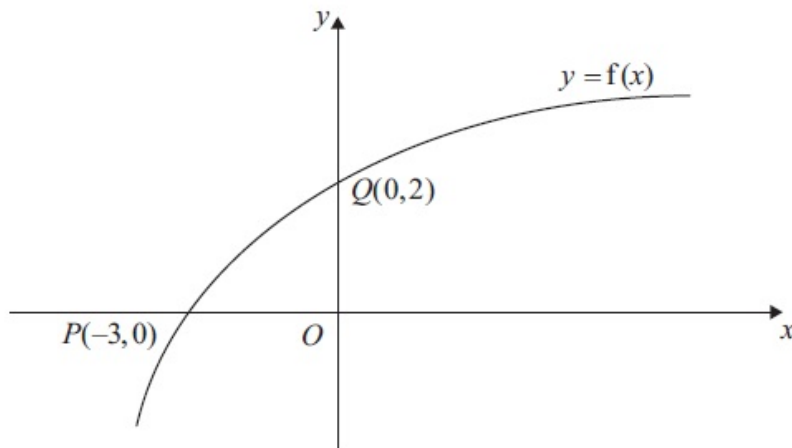


Figure 1

Figure 1 shows part of the curve with equation $y = f(x)$, $x \in \mathbb{R}$.

The curve passes through the points $Q(0, 2)$ and $P(-3, 0)$ as shown.

(a) Find the value of $ff(-3)$.

(2)

On separate diagrams, sketch the curve with equation:

b) $y = f^{-1}(x)$

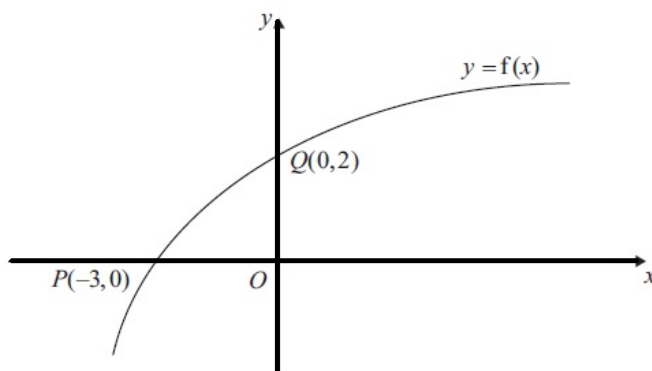


Figure 1

On separate diagrams, sketch the curve with equation:

c) $y = f(|x|) - 2$

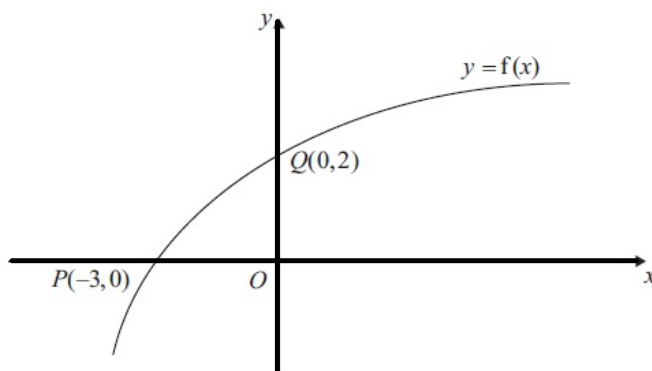
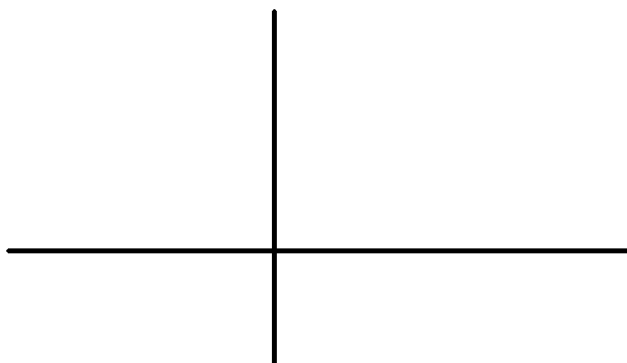


Figure 1



On separate diagrams, sketch the curve with equation:

d) $y = 2f\left(\frac{1}{2}x\right)$

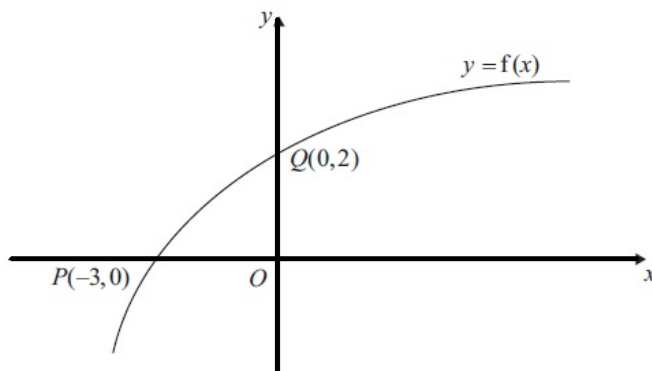
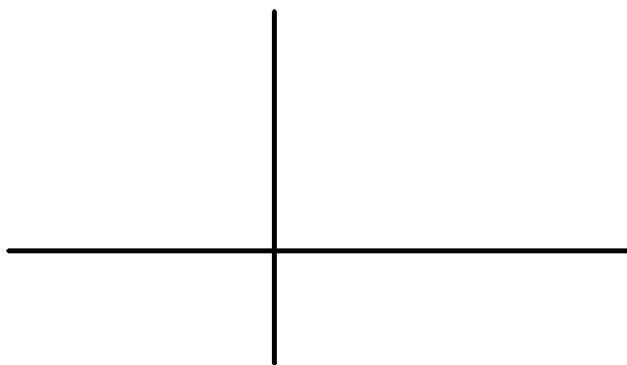


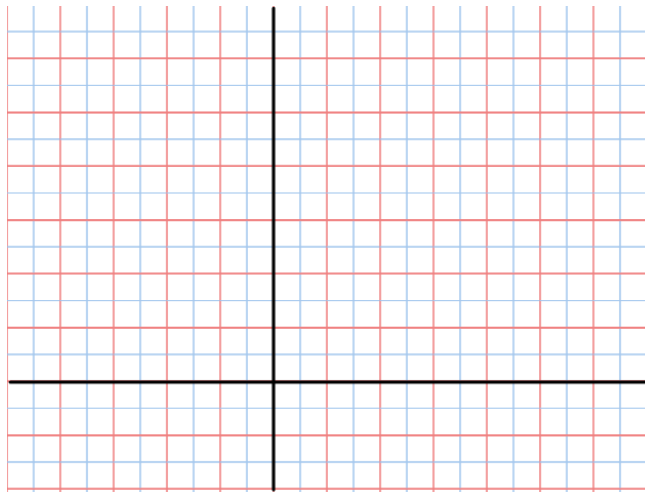
Figure 1



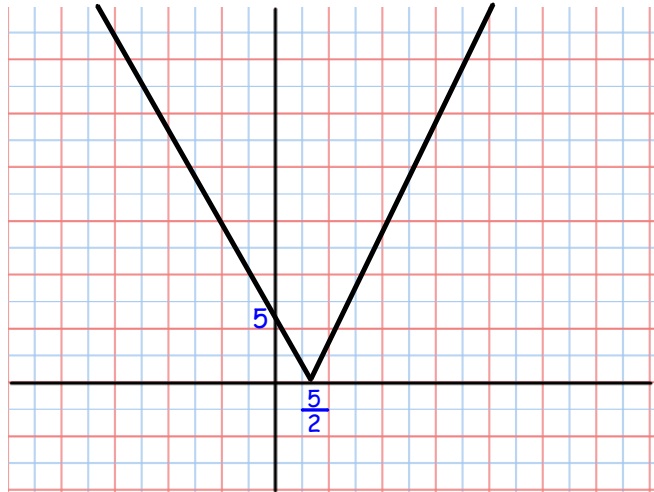
2)

The function f is defined by $f(x) = |2x - 5|$

a) Sketch the graph of $y = f(x)$, showing the co-ordinates of the points where the graph cuts or meets the axes.



Solve $f(x) = 15 + x$



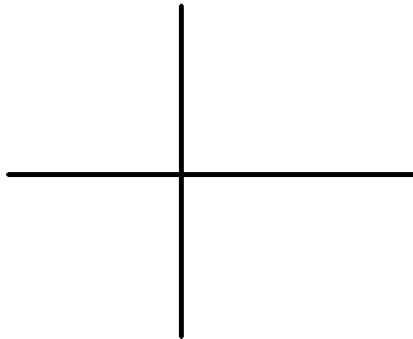
$$f(x) = |2x - 5|$$

The function $g(x)$ is defined by $g(x) = x^2 - 4x + 1$, $0 \leq x \leq 5$

c) Find $fg(2)$

The function $g(x)$ is defined by $g(x) = x^2 - 4x + 1$, $0 \leq x \leq 5$

d) Find the range of $g(x)$



3) The functions f is defined by

$$f: x \mapsto \frac{2(x-1)}{x^2-2x-3} - \frac{1}{x-3} \quad x > 3$$

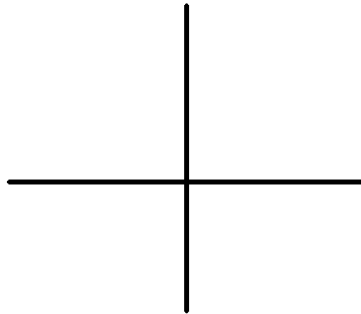
a) Show the $f(x) = \frac{1}{x+1}$

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a) Show that $f(x) = \frac{1}{x+1}$

b) Find the range of f



c) Find $f^{-1}(x)$. State the domain of this inverse function

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b) Find the range of f

c) Find $f^{-1}(x)$. State the domain of this inverse function

g is defined by $g: x \mapsto 2x^2 - 3$

d) Solve $fg(x) = \frac{1}{8}$

The diagram shows a sketch of part of the curve $y = f(x)$, $x \in \mathbb{R}$. The curve meets the axes at $A(0, 1-k)$ and $B(\frac{1}{2} \ln k, 0)$, where $k > 1$.

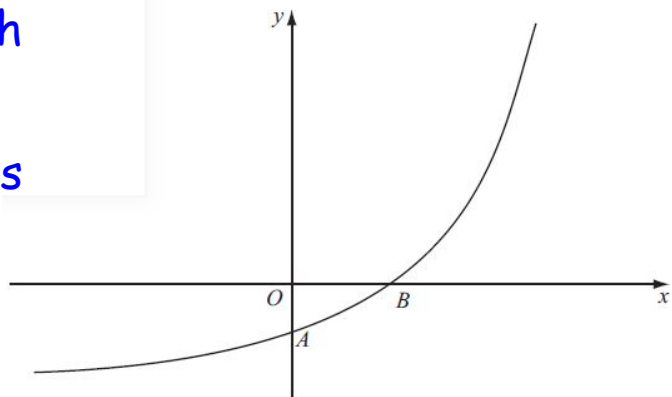


Figure 2

Sketch the curve with equation

a) $y = |f(x)|$

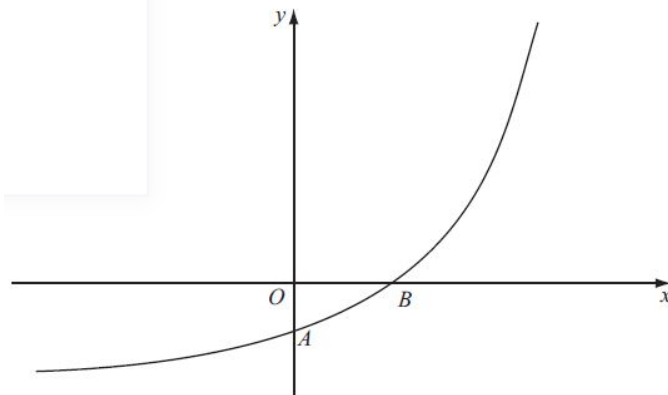


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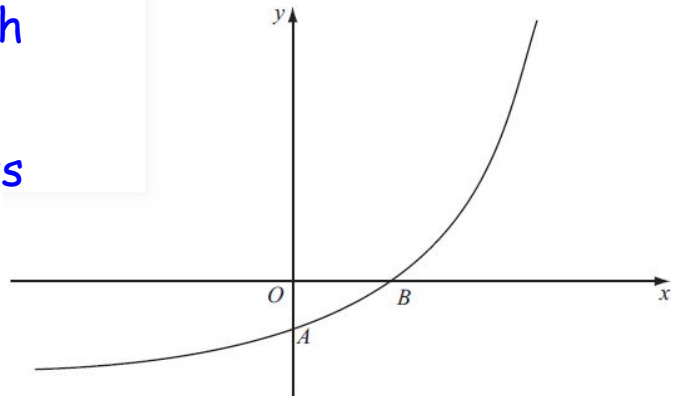


Figure 2

Sketch the curve with equation

b) $y = f^{-1}(x)$

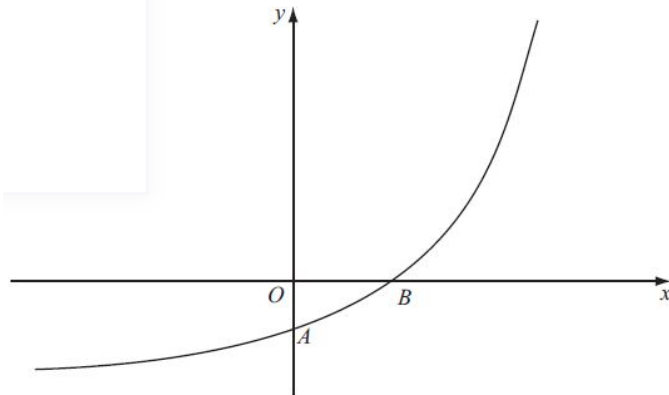


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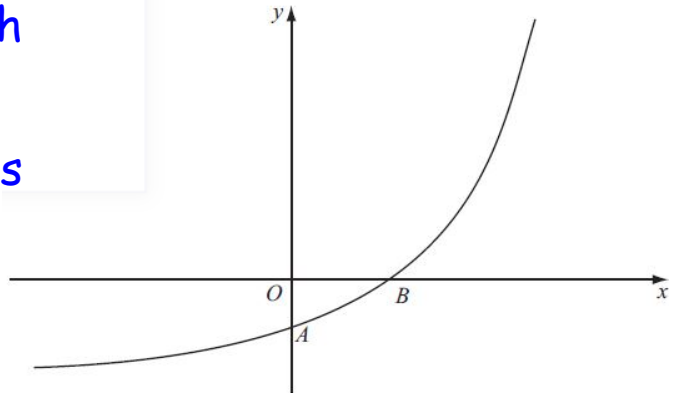
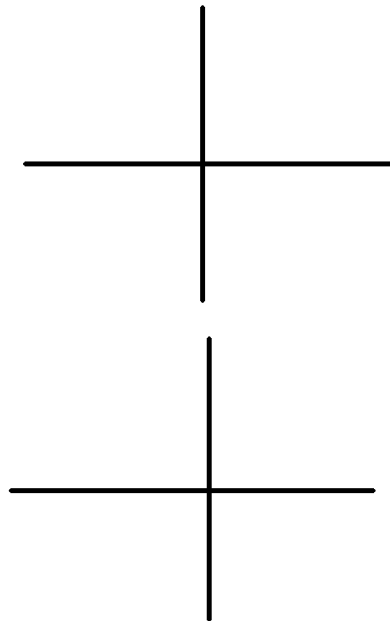


Figure 2

Given that $f(x) = e^{2x} - k$

c) State the range of f



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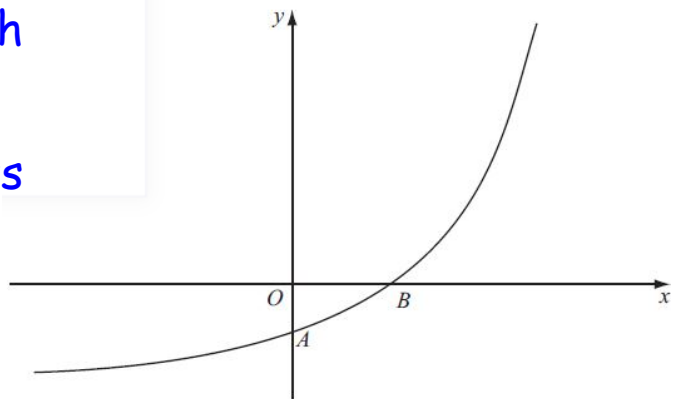


Figure 2

Given that $f(x) = e^{2x} - k$

d) find $f^{-1}(x)$

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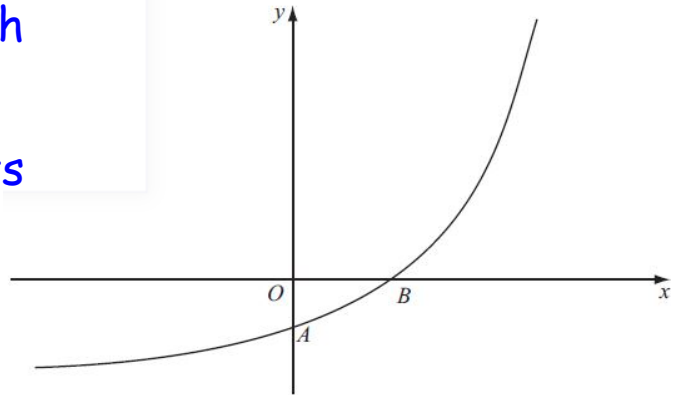


Figure 2

Given that $f(x) = e^{2x} - k$

e) write down the domain of $f^{-1}(x)$

