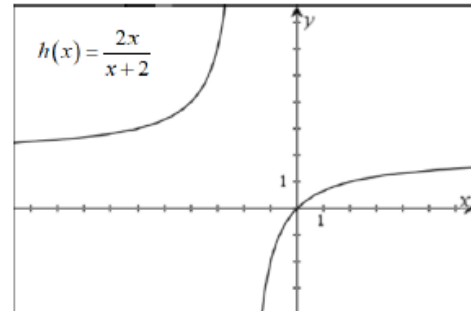


Inverse Functions

Part I – No GDC on questions 1-3

- Consider the function $p(x) = \sqrt{x+4}$.
 - Write down the domain and range of p .
 - Find the inverse of function p , $p^{-1}(x)$.
 - Write down the domain and range of p .

- The graph of $h(x) = \frac{2x}{x+2}$ is shown below.
 - Show that the line $y = -x$ intersects the graph of $h(x)$ at the points $(0, 0)$ and $(-4, 4)$.
 - Sketch the graph of $h^{-1}(x)$.
 - Write down the coordinates of the points where the graph of $h^{-1}(x)$ intersects $y = -x$.



- The function f is defined as $f(x) = \log_2 x$.
 - Write down the inverse of f ; that is, $f^{-1}(x)$.
 - The line $y = 11 - x$ intersects the graph of $f(x)$ at (a, b) and the graph of $f^{-1}(x)$ at (b, a) . Given that a and b are positive integers, find the value of a and the value of b .

Part II – GDC is allowed on questions 4-6

- Consider the function $g(x) = 2 + \frac{6}{3-x}$.
 - Determine the domain and range of g .
 - Find the inverse of g , $g^{-1}(x)$.
 - Show that the graphs of $g(x)$ and $g^{-1}(x)$ have no points of intersection.
- The function h is defined as $h(x) = e^{x-e}$.
 - State the domain and range of h .
 - Find $h^{-1}(x)$, the inverse of h .
 - Find the coordinates of all points of intersection of the graphs of $h(x)$ and $h^{-1}(x)$.
- Sketch a graph of the function $f(x) = \frac{3}{2}x^2 - 3$, $x \geq 0$.
 - Find the inverse of f ; that is, find $f^{-1}(x)$.
 - Find the coordinates of the point of intersection of $f(x)$ and $f^{-1}(x)$.