

- True or false: $(f \circ g)(x) = f(x) \cdot g(x)$.
- True or false: The graph of $y = 2^x$ and $y = (\frac{1}{2})^x$ are symmetric with respect to the y -axis.
- True or false: For the equation $y = a^x$ ($a > 0, a \neq 0$), $y \rightarrow \infty$ as $x \rightarrow \infty$.
- For the exponential function $f(x) = a^x$ the domain is _____ and the range is _____.
- The exponential function $f(x) = a^x$ is increasing when _____ and is decreasing when _____.
- If f^{-1} denotes the inverse of a function f , then the graphs of f and f^{-1} are symmetric with respect to which line?
- Given $f(x) = x^2 + 1$ and $g(x) = \sqrt{x - 6}$, find a formula for $f \circ g(x)$ and $g \circ f(x)$. Find the domain of $f \circ g(x)$ and $g \circ f(x)$.
- Find the inverse of the given one to one functions below. State the domain and range of the inverse function.

$$(a) f(x) = \frac{2x + 4}{x + 3} \quad (b) g(x) = \sqrt{x + 9} \quad (c) h(x) = x^3 - 1 \quad (d) k(x) = \frac{x^2 - 5}{4x^2}$$

- If $g(x) = e^{3x}$, and $h(x) = x^4$, find an equation for $(g \circ h)(x)$ and $(h \circ g)(x)$, and the domain of each function.
- Determine whether the given function is linear, exponential or neither. If the data is linear find a linear function that models the data and for those that are exponential find an exponential function that models the data.

(a)

x	-1	0	1	2	3
$f(x)$	$\frac{6}{5}$	6	30	150	750

(b)

x	-1	0	1	2	3
$f(x)$	-4	1	6	11	16

- Use transformations to graph the following functions. Then determine the domain, range and identify any asymptotes.

(a) $f(x) = 5 - e^x$

(b) $g(x) = 1 + 2^{x-1}$

- Graph the function $f(x) = \begin{cases} e^{-(x+3)}, & x < -3 \\ e^{(x+3)}, & x \geq -3 \end{cases}$. Based on the graph find the domain and the range and then find any intercept.