

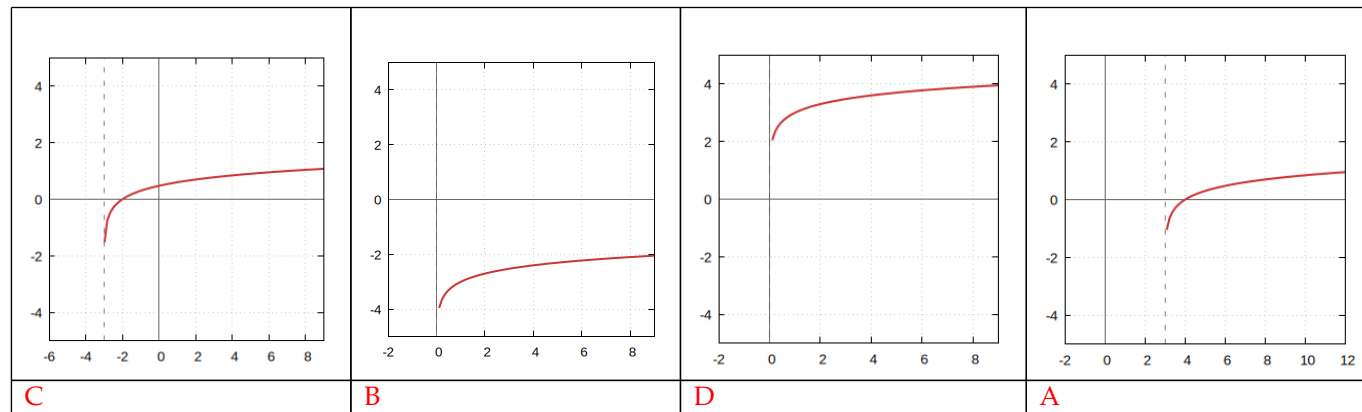
3.7 Transformations of Exponential and Logarithmic Functions Worksheet with solutions

This document was composed and formatted by Annie Bernatchez.

The course material originated from www.jensenmath.ca

1) Write the letter of the equation under the corresponding graph

A) $y = \log(x - 3)$ B) $y = \log x - 3$ C) $y = \log(x + 3)$ D) $y = \log x + 3$



2) Sketch a graph of each of the following logarithmic functions by applying transformations to the parent function. Make sure to identify key points such as asymptotes and x -intercepts.

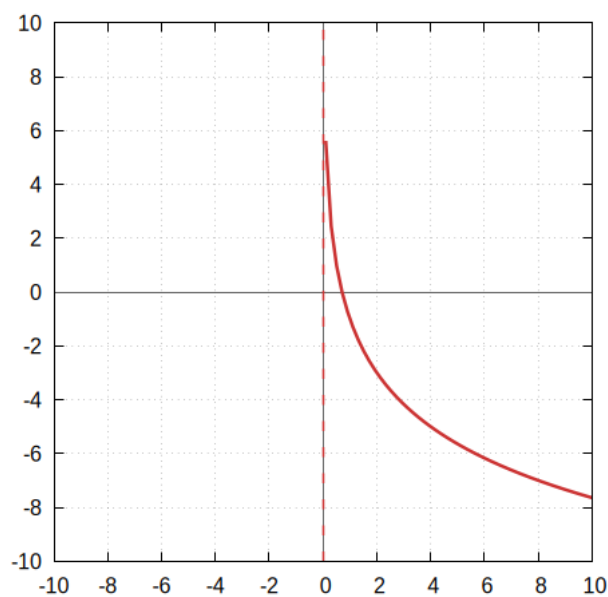
a) $f(x) = -2\log_2 x - 1$

Table 1. $y = \log_2 x$

x	y
0.5	-1
1	0
2	1
VA	$x = 0$

Table 2. $f(x) = -2\log_2 x - 1$

x	$-2y - 1$
0.5	1
1	-1
2	-3
VA	$x = 0$



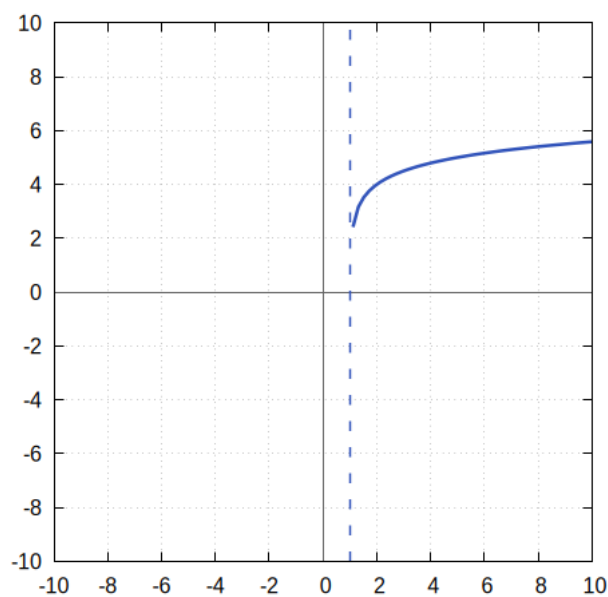
b) $g(x) = \log_4(x - 1) + 4$

Table 3. $y = \log_4 x$

x	y
0.25	-1
1	0
4	1
VA	$x = 0$

Table 4. $g(x) = \log_4(x - 1) + 4$

$x + 1$	$y + 4$
1.25	3
2	4
5	5
VA	$x = 1$



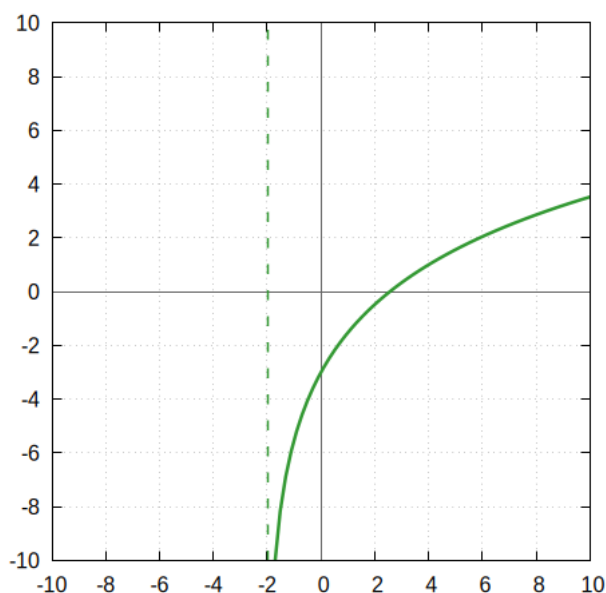
c) $h(x) = 4\log_3\left[\frac{1}{2}(x+2)\right] - 3$

Table 5. $y = \log_3 x$

x	y
0.33	-1
1	0
3	1
VA	$x = 0$

Table 6. $h(x) = 4\log_3\left[\frac{1}{2}(x+2)\right] - 3$

$2x - 2$	$4y - 3$
-1.33	-7
0	-3
4	1
VA	$x = -2$



3) Sketch a graph of each of the following exponential functions by applying transformations to the parent function. Make sure to identify key points such as asymptotes and y -intercepts.

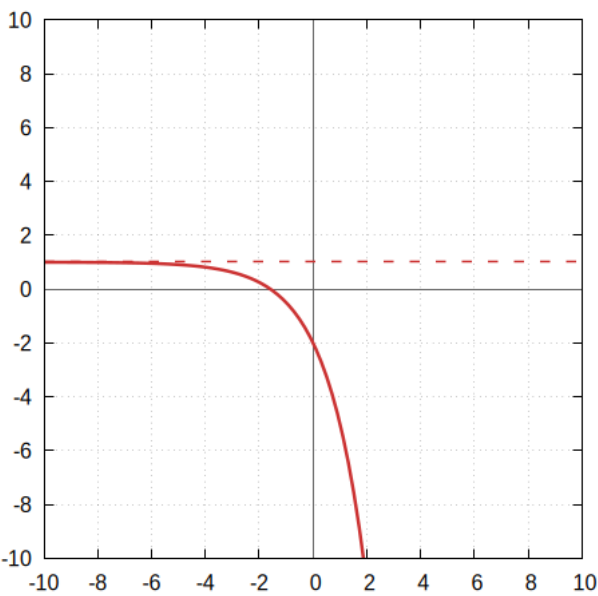
a) $f(x) = -3(2)^x + 1$

Table 7. $y = 2^x$

x	y
-1	0.5
0	1
1	2
HA	$y = 0$

Table 8. $f(x) = -3(2)^x + 1$

x	$-3y + 1$
-1	-0.5
0	-2
1	-5
HA	$y = 1$



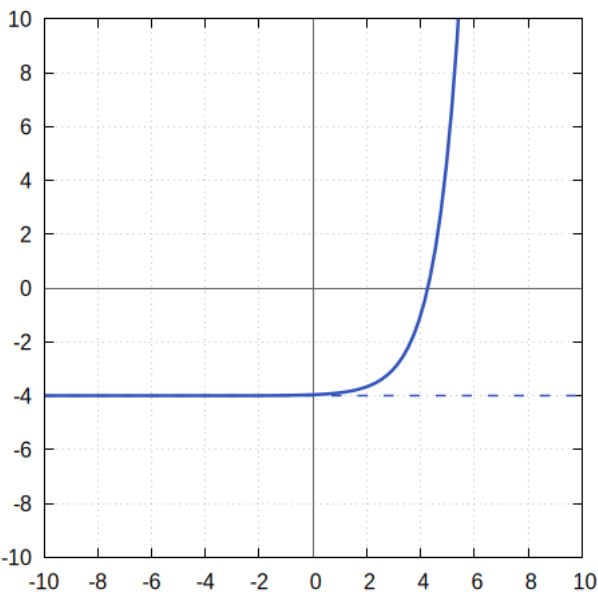
b) $g(x) = 3^{x-3} - 4$

Table 9. $y = 3^x$

x	y
-1	0.33
0	1
1	3
HA	$y = 0$

Table 10. $g(x) = 3^{x-3} - 4$

$x + 3$	$y - 4$
2	-3.67
3	-3
4	-1
HA	$y = -4$



c) $h(x) = 2(4)^{\frac{1}{2}(x+1)} - 3$

Table 11. $y = 4^x$

x	y
-1	0.25
0	1
1	4
HA	$y = 0$

Table 12. $h(x) = 2(4)^{\frac{1}{2}(x+1)} - 3$

$2x - 1$	$2y - 3$
-3	-2.5
-1	-1
1	5
HA	$y = -3$

