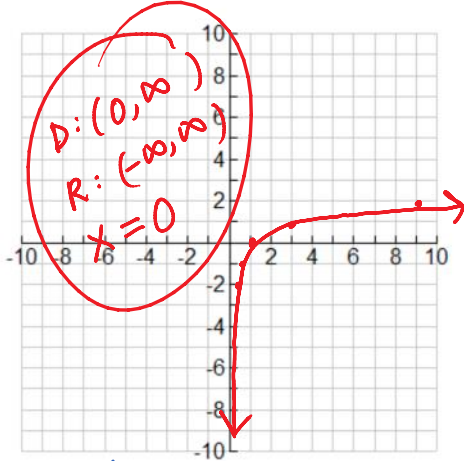Advanced Algebra w/ Trig

Name:

7.4 Review

$$\left(\frac{1}{4}\right)^{-2} = \left(\frac{4}{1}\right)^2$$

Graph the Logarithm. Then state the domain, range and equation of the asymptote.
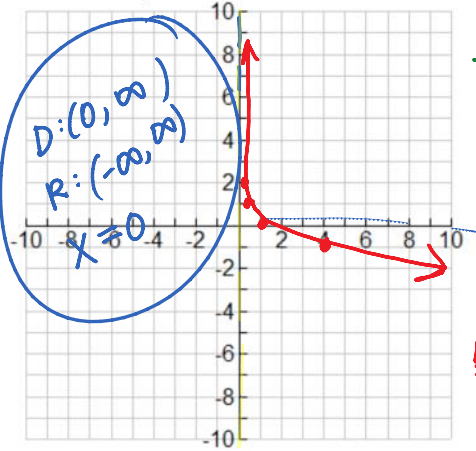
1. $g(x) = \log_3(x)$

$D: (0, \infty)$
$R: (-\infty, \infty)$
$x = 0$

$y = 3^x$

x	y
-2	1/9
-1	1/3
0	1
1	3
2	9

$y = \log_3 x$

x	y
1/9	-2
1/3	-1
1	0
3	1
9	2

2. $h(x) = \log_{\frac{1}{4}} x$

$h^{-1}(x) = \left(\frac{1}{4}\right)^x$

$D: (0, \infty)$
$R: (-\infty, \infty)$
$x = 0$

x	y
-2	16
-1	4
0	1
1	1/4
2	1/16

LOG

x	y
16	-2
4	-1
1	0
1/4	1
1/16	2

Find the inverse of the following functions.

1. $y = \log x$

$x = \log y$
$x = \log_{10} y$
$x = \text{wego}_{10} y$

$\boxed{10^x = y}$

2. $y = \log_3 x$

$y = 3^x$

3. $y = \log_2(x+2)$

$x = \log_2(y+2)$

$2^x = y+2$
$\;\;\; -2 \quad\quad -2$

$\boxed{2^x - 2 = y}$

4. $y = \ln x - 5$

$x = \ln y - 5$
$x = \log_e y - 5$
$\;+5 \quad\quad\quad +5$
———————————
$x + 5 = \log_e y$

$\boxed{e^{x+5} = y}$

5. $y = 2^x$

$x = 2^y$

$\boxed{y = \log_2 x}$

6. $y = e^x$

$y = \log_e x$

$\boxed{y = \ln x}$

7. $y = 4^x + 3$

$x = 4^y + 3$
$\;-3 \quad\quad -3$
——————————
$x - 3 = 4^y$

$\boxed{y = \log_4(x-3)}$

8. $y = \left(\frac{1}{2}\right)^{x-2}$

$x = \left(\frac{1}{2}\right)^{y-2}$

$y - 2 = \log_{\frac{1}{2}} x$

$\boxed{y = \log_{\frac{1}{2}} x + 2}$

$y = \ln x$

$y = \log_4 (x-3)$

$\sqrt[3]{\tfrac{1}{2}}$

$y = \log_{\frac{1}{2}} x + 2$

Find the inverse of the following functions.

1. $y = \log x$

2. $y = \log_3 x$

3. $y = \log_2(x+2)$

4. $y = \ln x - 5$

5. $y = 2^x$

6. $y = e^x$

7. $y = 4^x + 3$

8. $y = \left(\dfrac{1}{2}\right)^{x-2}$