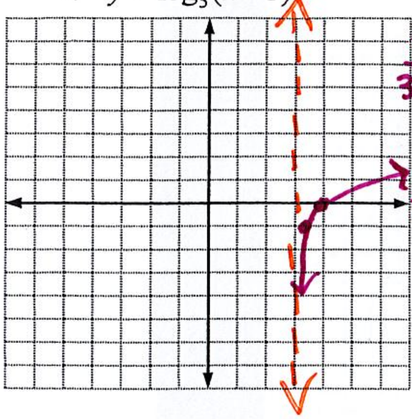
Graphing Logs WS 2 Name ______________________

Graph each of the functions. Be sure the asymptote appears on your graph. Also identify the domain, range, asymptote and end behavior

Inverse: $x = \log_5(y-3)$
$5^x = y-3$ $\boxed{y = 5^x + 3}$

1. $y = \log_5(x-3)$



x	y
3.2	-1
4	0
8	1
28	2

D $(3, \infty)$

R $(-\infty, \infty)$

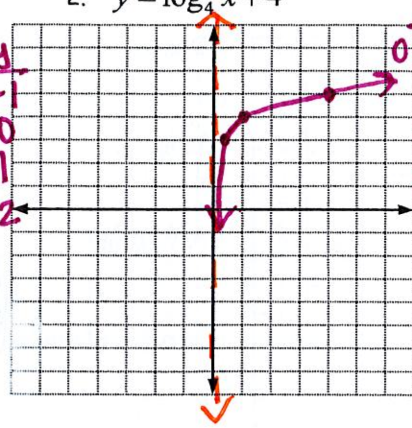
Asymptote $x = 3$

End As $x \to 3$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$

Inverse:
$x = \log_4 y + 4$
$x - 4 = \log_4 y$ $\boxed{4^{x-4} = y}$

2. $y = \log_4 x + 4$



x	y
0.25	3
1	4
4	5
16	6

D $(0, \infty)$

R $(-\infty, \infty)$

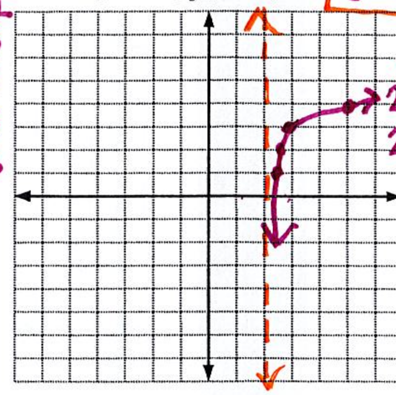
Asymptote $x = 0$

End As $x \to 0$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$

Inverse:
$x = \log_3(y-2) + 3$
$x - 3 = \log_3(y-2)$
$3^{x-3} = y-2$

3. $y = \log_3(x-2) + 3$ $\boxed{y = 3^{x-3} + 2}$



x	y
2.11	1
2.33	3
3	3
5	4

D $(2, \infty)$

R $(-\infty, \infty)$

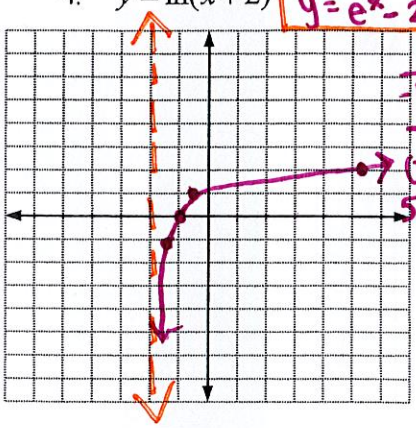
Asymptote $x = 2$

End As $x \to 2$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$

Inverse: $x = \ln(y+2)$
$e^x = y+2$

4. $y = \ln(x+2)$ $\boxed{y = e^x - 2}$



x	y
-1.6	-1
-1	0
0.72	1
5.4	2

D $(-2, \infty)$

R $(-\infty, \infty)$

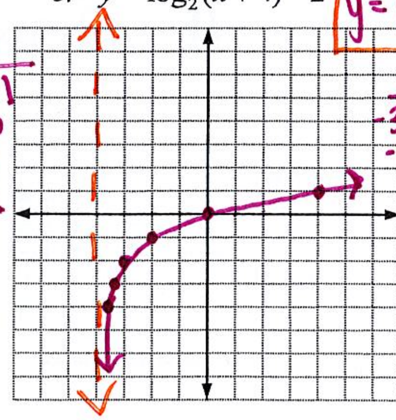
Asymptote $x = -2$

End As $x \to -2$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$

Inverse: $x = \log_2(y+4) - 2$
$x + 2 = \log_2(y+4)$ $2^{x+2} = y+4$

5. $y = \log_2(x+4) - 2$ $\boxed{y = 2^{x+2} - 4}$



x	y
-3.75	-4
-3.5	-3
-3	-2
-2	-1
0	0
4	1

D $(-4, \infty)$

R $(-\infty, \infty)$

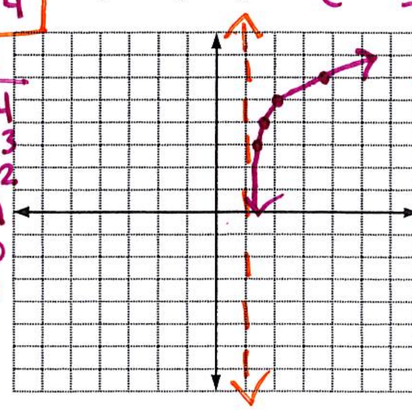
Asymptote $x = -4$

End As $x \to -4$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$

Inverse:
$x = \ln(y-1) + 5$ $e^{x-5} = \ln(y-1)$
$e^{x-5} = y-1$ $\boxed{y = e^{x-5} + 1}$

6. $y = \ln(x-1) + 5$



x	y
1.1	3
1.4	4
2	5
3.7	6
8.4	7

D $(1, \infty)$

R $(-\infty, \infty)$

Asymptote $x = 1$

End As $x \to 1$, $f(x) \to -\infty$

As $x \to \infty$, $f(x) \to \infty$