

Graphing log WS 2 - KEY

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

1st Inverse

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

$$5^x = y - 3$$

$$+3 \quad +3$$

$$y = 5^x + 3$$

2nd table of values

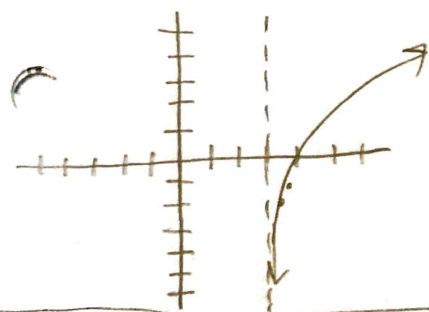
$$y = 5^x + 3$$

x	y
-2	$3\frac{1}{25}$
-1	$3\frac{1}{5}$
0	4
1	8
2	28

3rd switch x & y

x	y
$3\frac{1}{25}$	-2
$3\frac{1}{5}$	-1
4	0
8	1
28	2

4th Graph plot



D: $(3, \infty)$

R: \mathbb{R}

asymptote: $x=3$

2) $y = \log_4 x + 4$

1st inverse

$$x = \log_4 y + 4$$

$$-4 \quad -4$$

$$(x-4) = \log_4 y$$

$$y = 4^{x-4}$$

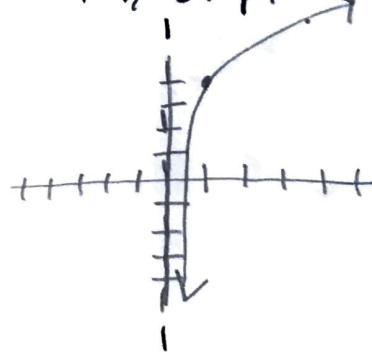
2nd table of values

x	y
4	1
5	4
6	16

3rd switch x & y

x	y
1	4
4	5
16	6

4th Graph



D: $(0, \infty)$

R: \mathbb{R}

asymptote: $x=0$

$$3) y = \log_3(x-2) + 3$$

1st // Inverse

$$x = \log_3(y-2) + 3$$

$$\begin{array}{ccc} -3 & & -3 \end{array}$$

$$(x-3) = \log_3(y-2)$$

$$3^{x-3} = y-2$$

$$\begin{array}{ccc} +2 & & +2 \end{array}$$

$$y = 3^{x-3} + 2$$

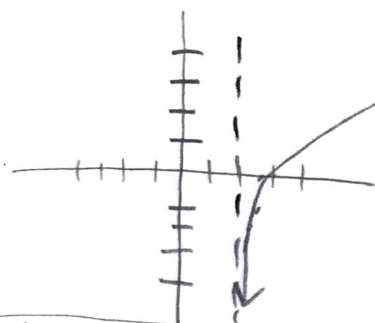
2nd // table of values

x	y
-2	2.004
-1	2.01
0	2.037
1	2.11
2	2.33
3	3

3rd // switch xdy

x	y
2.004	-2
2.01	-1
2.037	0
2.11	1
2.33	2
3	3

4th // Graph



$$D: (2, \infty)$$

$$R: \mathbb{R}$$

$$\text{asymptote: } x=2$$

$$4) y = \ln(x+2)$$

1st // inverse

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

$$e^x = y+2$$

$$\begin{array}{ccc} -2 & & -2 \end{array}$$

$$y = e^x - 2$$

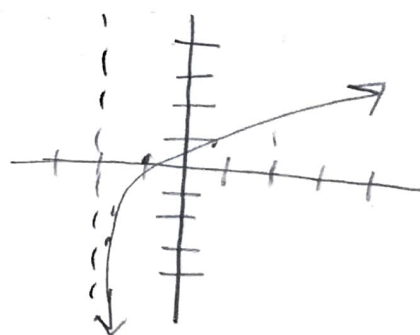
2nd // table of values

x	y
-3	-1.95
-2	-1.86
-1	-1.6
0	-1
1	.71
2	5.3

3rd // switch xdy

x	y
-1.95	-3
-1.86	-2
-1.6	-1
-1	0
.71	1
5.3	2

4th // Graph



$$D: (-2, \infty)$$

$$R: \mathbb{R}$$

$$\text{asymptote: } x = -2$$

$$5) y = \log_2(x+4) - 2$$

1st// inverse

$$x = \log_2(y+4) - 2$$

$$(x+2) = \log_2(y+4)$$

$$2^{x+2} = y+4$$

$$y = 2^{x+2} - 4$$

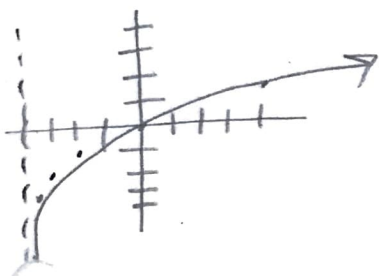
2nd// table of values

x	y
-3	-3.5
-2	-3
-1	-2
0	0
1	4
2	12

3rd// switch x & y

x	y
-3.5	-3
-3	-2
-2	-1
0	0
4	1
12	2

4th// Graph



$$D: (-4, \infty)$$

$$R: \mathbb{R}$$

$$\text{asymptote: } x = -4$$

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

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

$$e^{(x-5)} = y-1$$

$$e^{x-5} = y-1$$

$$y = e^{x-5} + 1$$

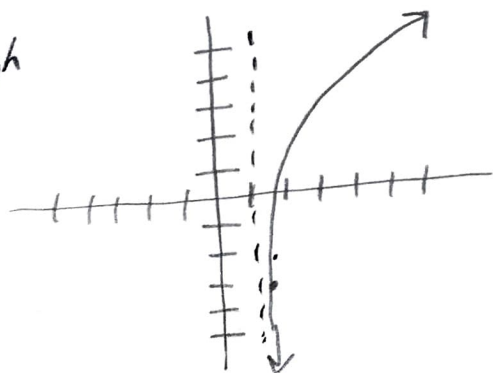
2nd// table of values

x	y
-3	1.0003
-2	1.0009
-1	1.0025
0	1.0067
1	1.0183
2	1.0498

3rd// switch x & y

x	y
1.0003	-3
1.0009	-2
1.0025	-1
1.0067	0
1.0183	1

4th// Graph



$$D: (1, \infty)$$

$$R: \mathbb{R}$$

$$\text{asymptote: } x = 1$$