More Log Stuff... ü

$y = a^x$ Find the inverse $f^{\underline{n}}$:
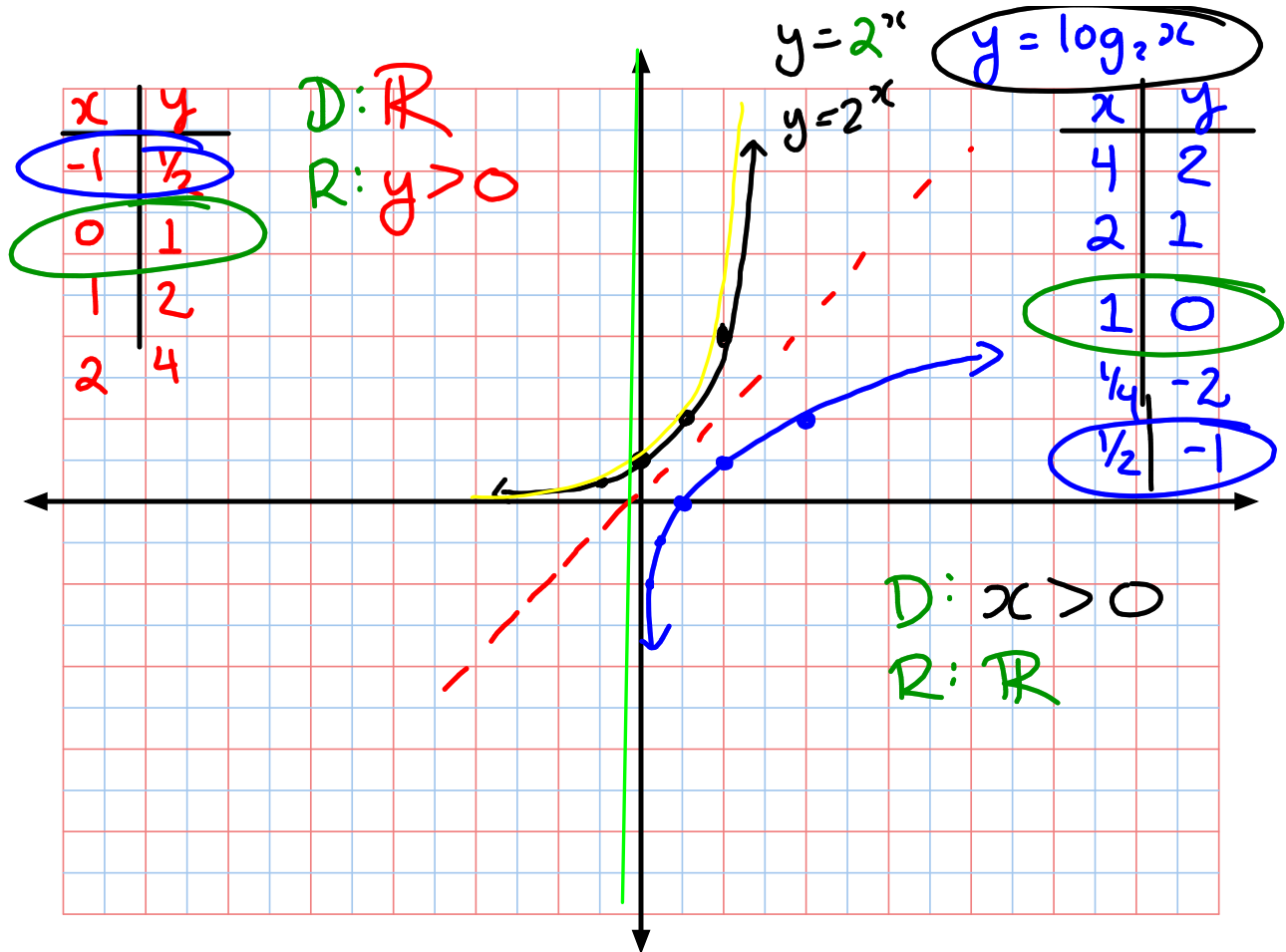
$$y = a^x \qquad a \neq 1, \; a > 0$$

$$x = a^y \quad \Rightarrow \text{ to isolate } y, \text{ write in log form}$$

$$y = \log_a x \qquad \hookrightarrow x > 0$$

$$a \neq 1, a > 0$$

$$f = a^x \qquad f^{-1} = \log_a x$$

$y = 2^x$

$y = 2^x$

$y = \log_2 x$

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

D: ℝ
R: y > 0

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

D: x > 0
R: ℝ

Recall: $y = a \, f(b(x-h)) + K$

↑ reflect stretch vert.

↑ reflect stretch horiz

↑ horiz slide

⤷ vert slide

$$y = a\left[\log_c(b(x-h)\right] + K$$

Parameters	Transformation (x,y)
a	(x, ay)
b	$\left(\dfrac{x}{b}, y\right)$
h	$(x+h, y)$
K	$(x, y+K)$

• The only parameter that changes the asymptote and domain is $\underline{h}$.
• The range never changes.

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

$$y = \log_2 x$$

÷2 then -3

x	y
8	3
2	1
1	0
½	-1
¼	-2

x	y
1	-3
-2	-1
	0
	1
	2

8.1　　8.2

$y = \log_2 x$