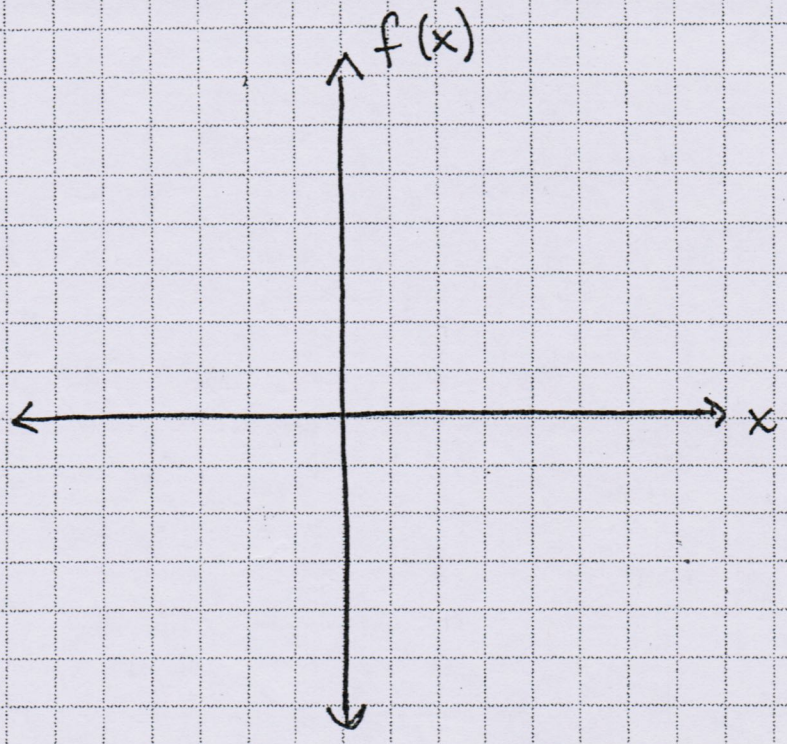
Graph:

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

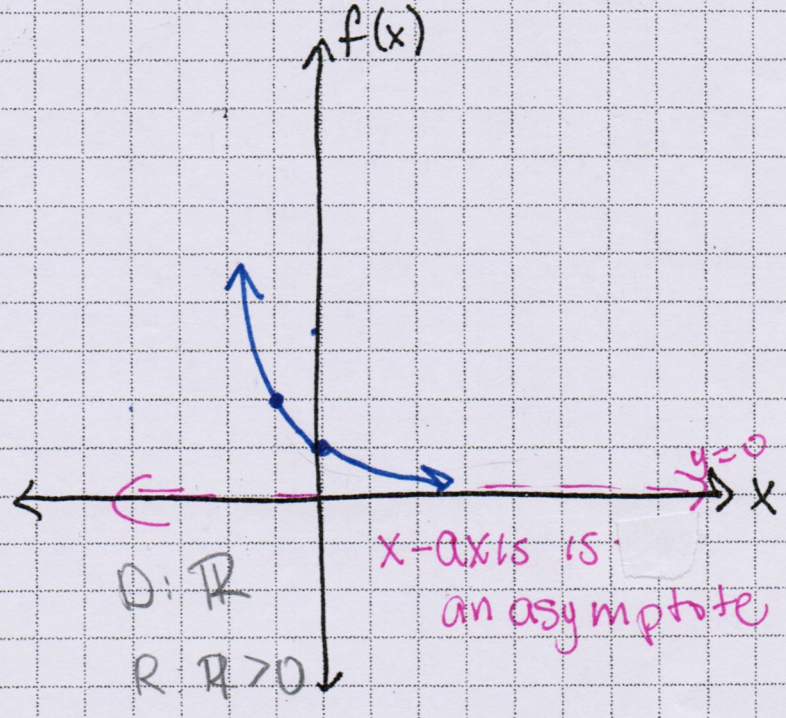
x	f(x)
-2	
-1	
-.5	
0	
.5	
1	
2	



Graph

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

x	f(x)
-2	4
-1	2
-.5	1.4
0	1
.5	.7
1	1/2
2	1/4

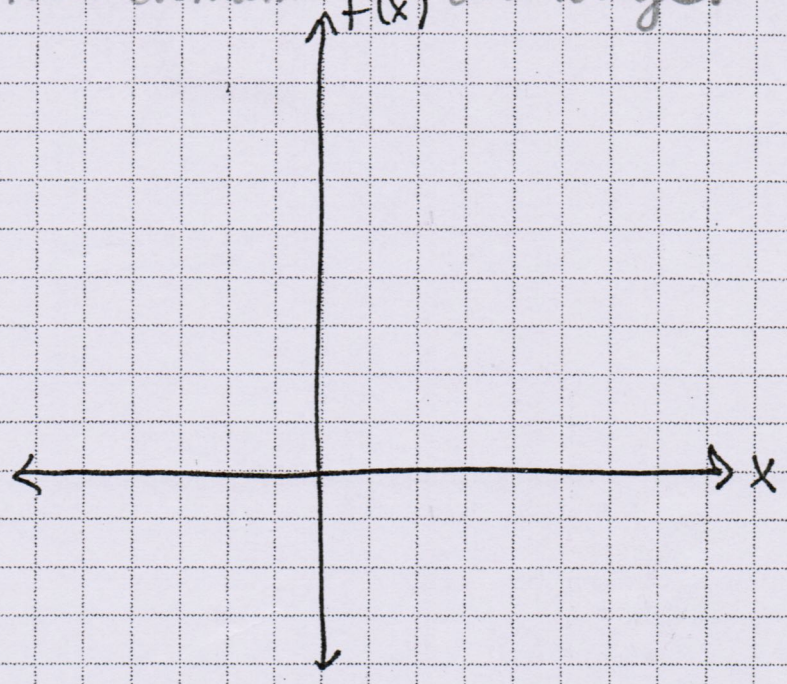


◎ I understand graphs $y = 2^x$ and $y = \left(\frac{1}{2}\right)^x$ and their domain and range.

Graph

$f(x) = 2^x$

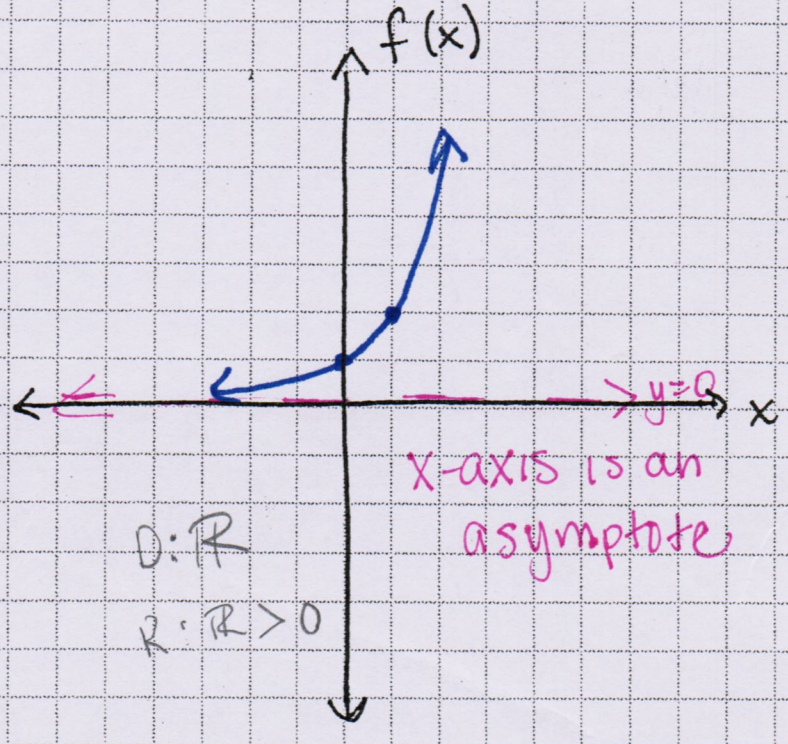
x	f(x)
-2	
-1	
-.5	
0	
.5	
1	
2	



Graph:

$f(x) = 2^x$

x	f(x)
-2	$2^{-2} = 1/2^2 = 1/4$
-1	$2^{-1} = 1/2 = 1/2$
-.5	$2^{-.5} = 1/2^{.5} = .7$
0	1
.5	1.41
1	2
2	4



x-axis is an asymptote

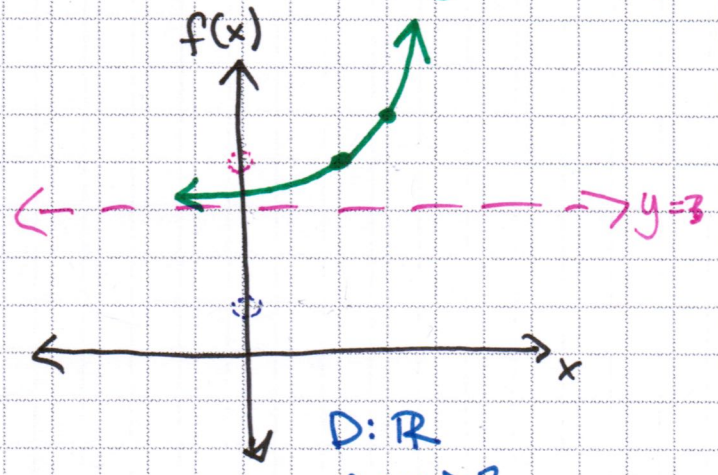
D: $\mathbb{R}$

R: $\mathbb{R} > 0$

$f(x) = 2^x$ or $\left(\frac{1}{2}\right)^x$

EX3] $f(x) = 2^{x-2} + 3$

shift 2 right 3 up

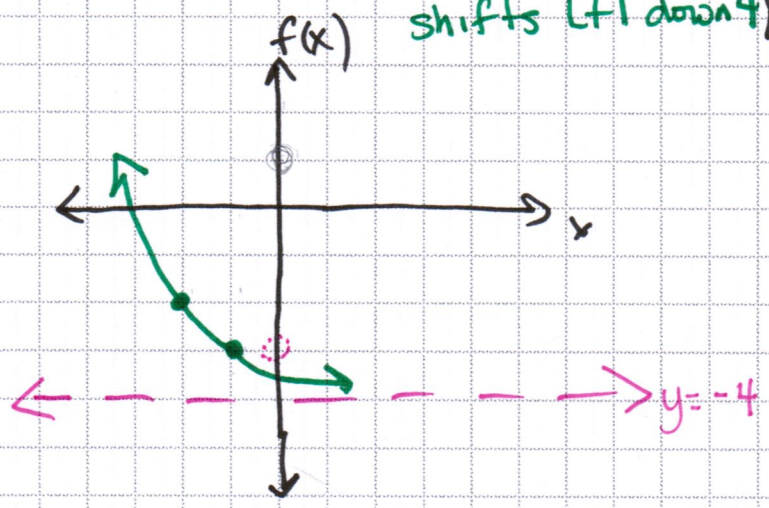


D: $\mathbb{R}$

R: $y > 3$

EX4] $f(x) = \left(\frac{1}{2}\right)^{x+1} - 4$

shifts Lt 1 down 4



D: $\mathbb{R}$

R: $y > -4$

$\mathbb{R} > -4$

NOTES

① shift horz. asy. up or down

② find important "(0, 1)" point

③ Shift that point Lt or Rt

④ Find next point by over 1 (Lt or Rt) up or down 1 (depends on graph)

⑤ draw graph towards asym. and up (or down)

next critical point

if base is 2 or $\frac{1}{2}$ then next point is over 1 up 1

if base is 3 or $\frac{1}{3}$ then next point is over 1 up 2

if base is 4 or $\frac{1}{4}$ then over 1 up 3...