

Target 1- I can graph exponential growth functions

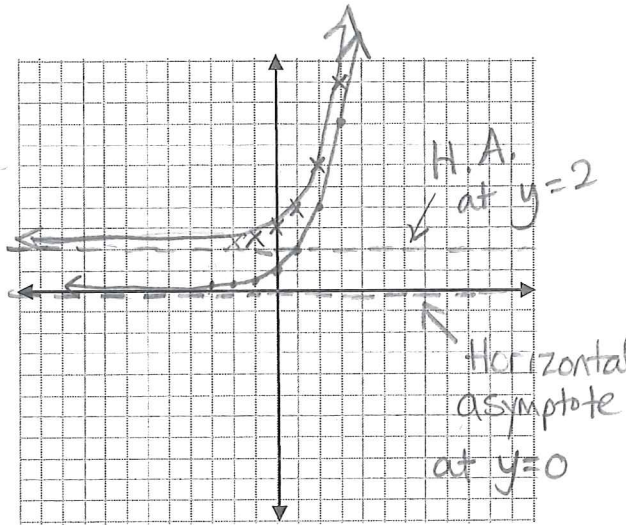
Key

$y = 2^x$

Coordinate Point
$(-3, 0.125)$
$(-2, 0.25)$
$(-1, 0.5)$
$(0, 1)$
$(1, 2)$
$(2, 4)$
$(3, 8)$

Domain: $(-\infty, \infty)$

Range: $(0, \infty)$



$y = 2^x + 2$

Coordinate Point
$(-2, 2.25)$
$(-1, 2.5)$
$(0, 3)$
$(1, 4)$
$(2, 6)$
$(3, 10)$

Domain: $(-\infty, \infty)$

Range: $(2, \infty)$

Standard Form of Exponential Growth Function: Remember: $1 < b < \infty$

Transformations from parent

$y = ab^{x-h} + k$

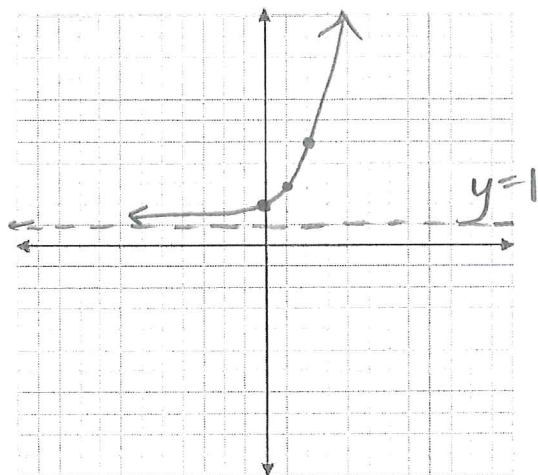
* Negative in front indicates flip

a
Stretch by a

h
Shift $\leftarrow \rightarrow$
(opposite)

k
Shift $\uparrow \downarrow$

Graph the function on the coordinate plane and fill in all the information.



1. Graph: $f(x) = 2^x + 1$
 Transformations: Shift up 1

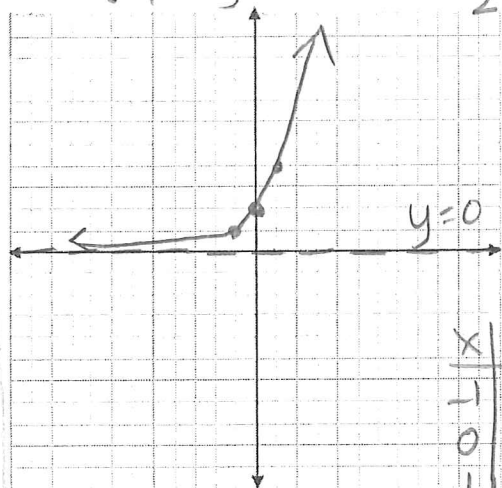
Horizontal asymptote: $y = 1$

y-intercept: $(0, 2)$

Domain: $(-\infty, \infty)$

Range: $(1, \infty)$

x	y
0	2
1	3
2	5



3. Graph: $f(x) = 2^{x+1}$
 Transformations: Shift left 1

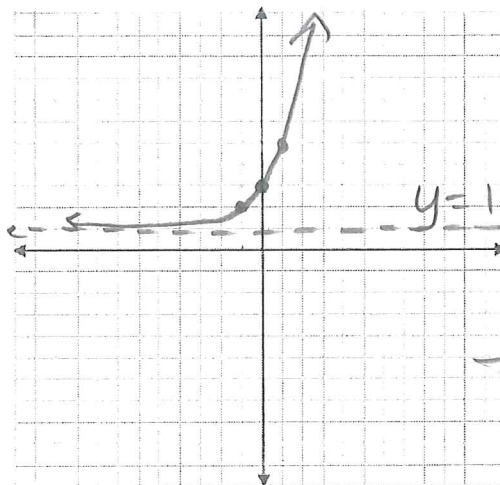
Horizontal asymptote: $y = 0$

y-intercept: $(0, 2)$

Domain: $(-\infty, \infty)$

Range: $(0, \infty)$

x	y
-1	1
0	2
1	4



2. Graph: $f(x) = 2 \cdot 2^x + 1$

Transformations: Stretch by 2, Shift up 1

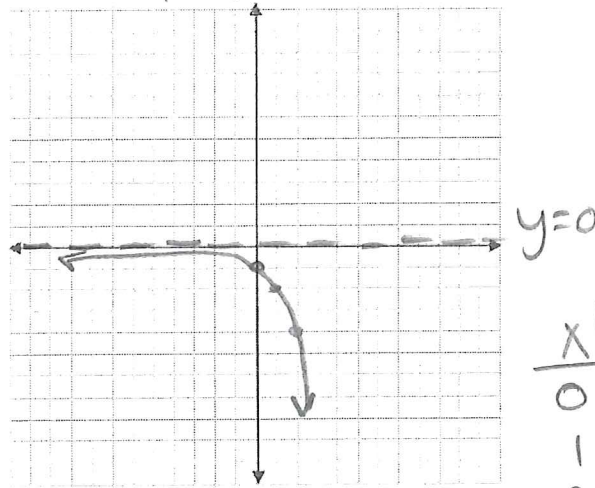
Horizontal asymptote: $y = 1$

y-intercept: $(0, 3)$

Domain: $(-\infty, \infty)$

Range: $(1, \infty)$

x	y
-1	2
0	3
1	5



4. Graph: $f(x) = -2 \cdot 2^{x-1}$
 Transformations: flips; stretch by 2, Shift Right 1

Horizontal asymptote: $y = 0$

y-intercept: $(0, -1)$

Domain: $(-\infty, \infty)$

Range: $(-\infty, 0)$

x	y
0	-1
1	-2
2	-4