

Graphing Exponentials Notes ~ Graph and identify the characteristics for each Exponential Function.

$f(x) = 2^x$

x	y
-2	.25
-1	.5
0	1
1	2
2	4

$f(x) = (\frac{1}{3})^x$

x	y
-2	9
-1	3
0	1
1	.3
2	.1

Asymptote	$y = 0$
Domain	$(-\infty, \infty)$
Range	$(0, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow 0$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	Growth

Asymptote	$y = 0$
Domain	$(-\infty, \infty)$
Range	$(0, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow 0$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	Decay

$f(x) = (\frac{1}{2})^{x-1} + 1$

x	y
-2	9
-1	5
0	3
1	2
2	1.5

$f(x) = -3(2)^{x-1} - 2$

x	y
-2	-2.4
-1	-2.8
0	-3.5
1	-5
2	-8

Asymptote	$y = 1$
Domain	$(-\infty, \infty)$
Range	$(1, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow 1$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	$\rightarrow 1, \uparrow 1$

Asymptote	$y = -2$
Domain	$(-\infty, \infty)$
Range	$(-\infty, -2)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow -2$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	reflection, stretch by 3, $\rightarrow 1, \downarrow 2$

$f(x) = (3)^{x-2} + 1$

x	y
-2	1.01
-1	1.04
0	1.1
1	1.3
2	2
3	4

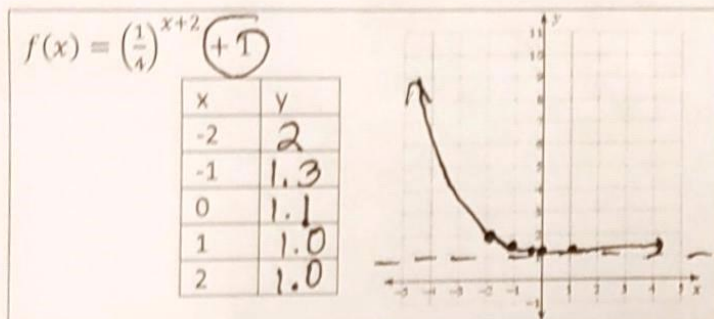
$f(x) = -4(\frac{1}{2})^{x+1} - 1$

x	y
-2	-7
-1	-3
0	-1
1	0
2	.5

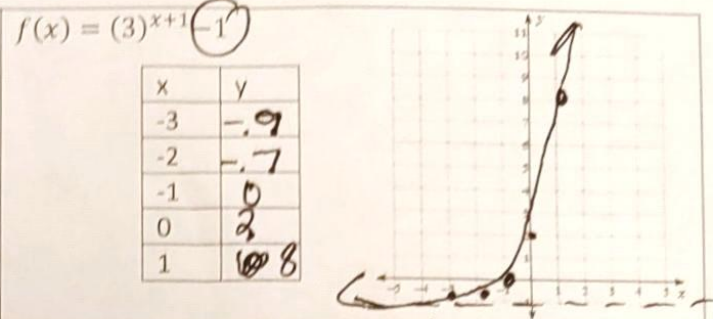
Asymptote	$y = 1$
Domain	$(-\infty, \infty)$
Range	$(1, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow 1$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	stretch $\rightarrow 2, \uparrow 1$

Asymptote	$y = 1$
Domain	$(-\infty, \infty)$
Range	$(-\infty, 1)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow -\infty$ Right: As $x \rightarrow \infty, y \rightarrow 1$
Transformations	reflection, stretch by 4, $\leftarrow 1, \uparrow 1$

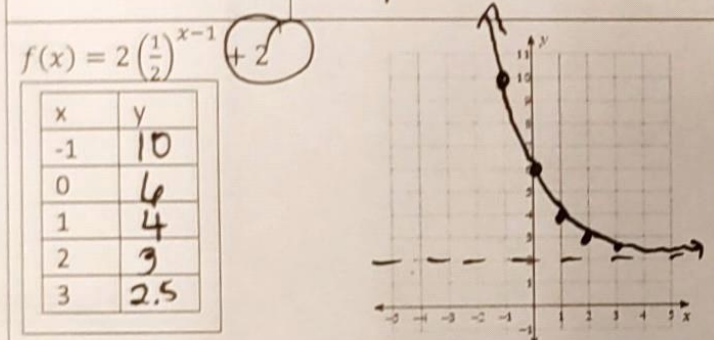
Graphing Exponentials Practice ~ Graph and identify the characteristics for each Exponential Function.



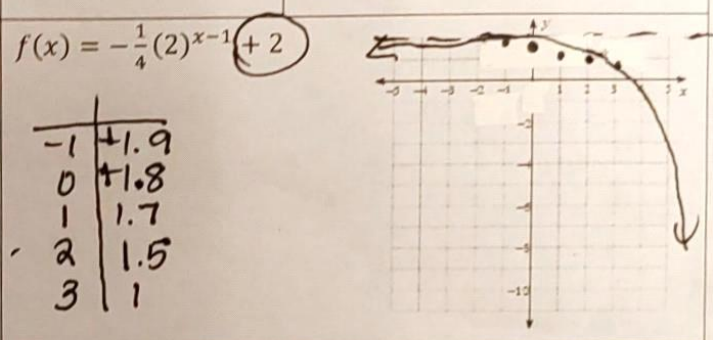
Asymptote	$y = 1$
Domain	$(-\infty, \infty)$
Range	$(1, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow \infty$ Right: As $x \rightarrow \infty, y \rightarrow 1$
Transformations	$\leftarrow 2, \uparrow 1$



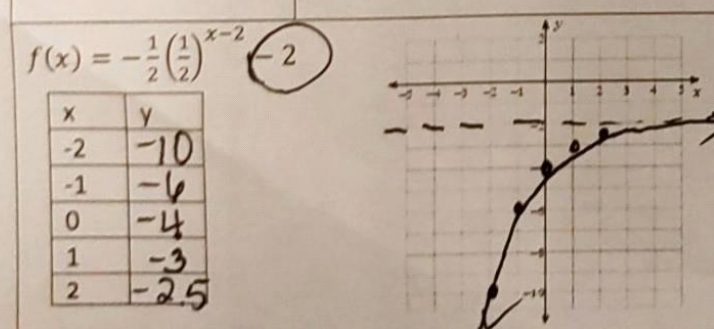
Asymptote	$y = -1$
Domain	$(-\infty, \infty)$
Range	$(-1, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow -1$ Right: As $x \rightarrow \infty, y \rightarrow \infty$
Transformations	$\leftarrow 1, \downarrow 1$



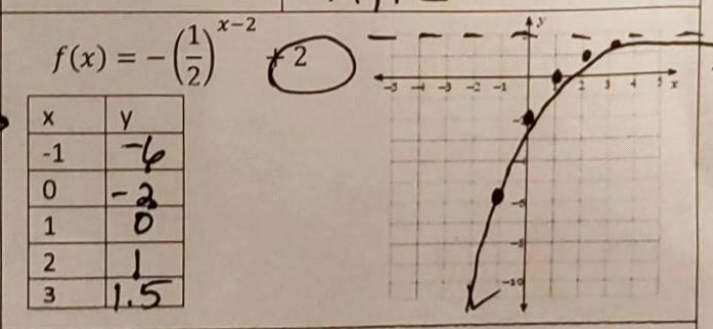
Asymptote	$y = 2$
Domain	$(-\infty, \infty)$
Range	$(2, \infty)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow \infty$ Right: As $x \rightarrow \infty, y \rightarrow 2$
Transformations	Stretch by 2, $\rightarrow 1, \uparrow 2$



Asymptote	$y = 2$
Domain	$(-\infty, \infty)$
Range	$(-\infty, 2)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow 2$ Right: As $x \rightarrow \infty, y \rightarrow -\infty$
Transformations	reflection, shrink by $\frac{1}{4}$, $\rightarrow 1, \uparrow 2$



Asymptote	$y = -2$
Domain	$(-\infty, \infty)$
Range	$(-\infty, -2)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow -\infty$ Right: As $x \rightarrow \infty, y \rightarrow -2$
Transformations	reflection, shrink by $\frac{1}{2}$, $\rightarrow 2, \downarrow 2$



Asymptote	$y = 2$
Domain	$(-\infty, \infty)$
Range	$(-\infty, 2)$
Increase/Decrease	$(-\infty, \infty)$
End Behavior	Left: As $x \rightarrow -\infty, y \rightarrow -\infty$ Right: As $x \rightarrow \infty, y \rightarrow 2$
Transformations	reflection, $\rightarrow 2, \uparrow 2$