Homework Questions??

#8 $6^{a} = 10^{a-2}$

$\log(6^{a}) = \log(10^{a-2})$

$a \log 6 = (a-2) \log 10$

$a(0.78) = (a-2)1$

$0.78a = a - 2$

$-a \quad -a$

$-0.22a = -2$

$\frac{-0.22a}{-0.22} = \frac{-2}{-0.22}$

$a = 9.09$

#10 $2^{K+8} = 10^{K-4}$

$\log(2^{K+8}) = \log(10^{K-4})$

$(K+8)\log 2 = (K-4)\log 10$

$(K+8)0.30 = (K-4)1$

$0.30K + 2.4 = K - 4$

$-0.30K \qquad -0.30K$

$2.4 = 0.70K - 4$

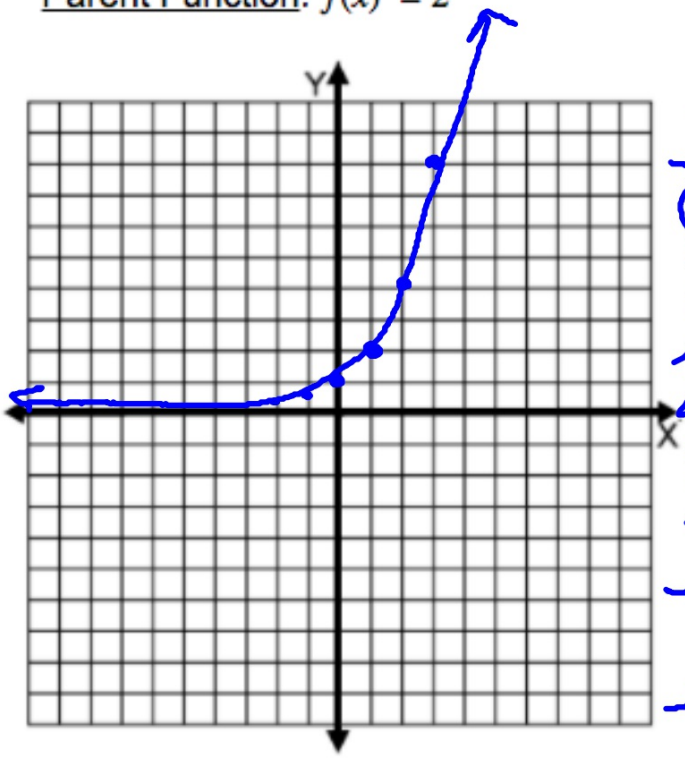
$+4 \qquad +4$

$\frac{6.4}{0.70} = \frac{0.70K}{0.70}$

$K = 9.14$

Guided Notes: Graphing Logarithmic and Exponential Functions

Parent Function: $f(x) = 2^x$



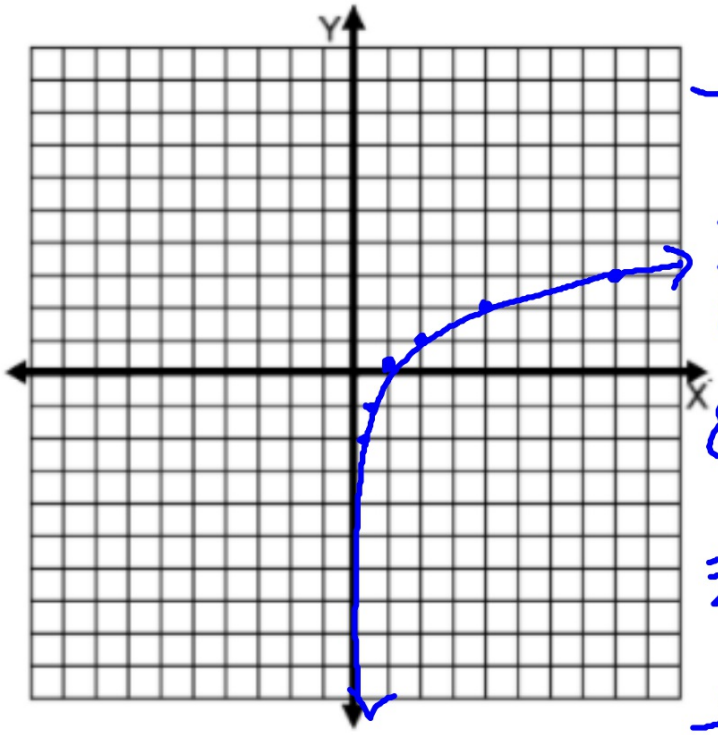
x	f(x)
0	1
1	2
2	4
3	8
-1	$\frac{1}{2}$
-2	$\frac{1}{4}$

[Observations]:

- increasing from left to right
- All y-values are positive

Parent Function: $f(x) = \log_2 x$

[Observations]:

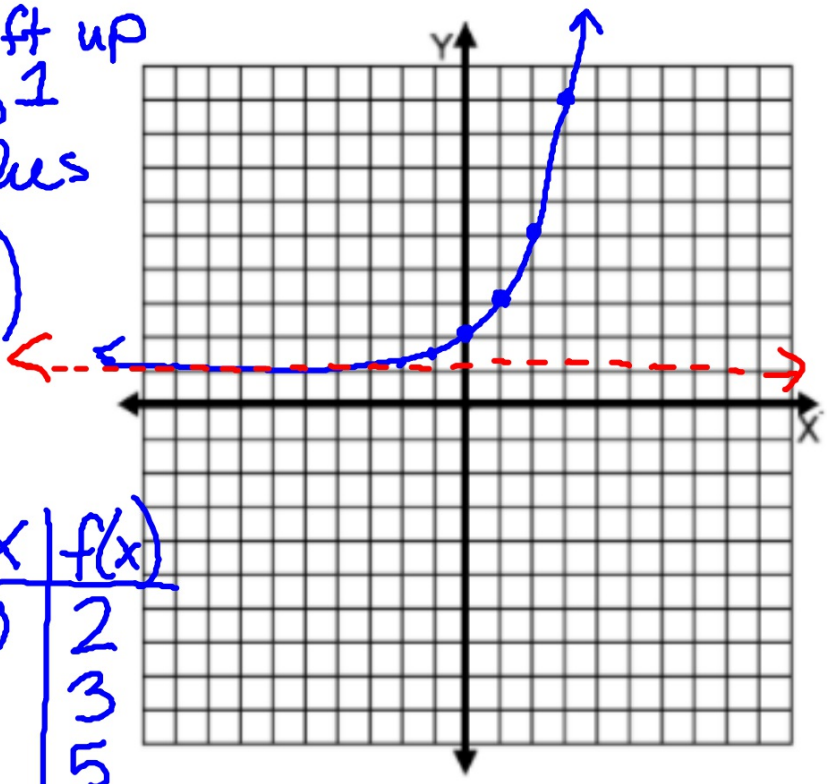


x	f(x)
1	0
2	1
4	2
8	3
$\frac{1}{2}$	-1
$\frac{1}{4}$	-2

- Increasing from left to right
- All x-values are positive

EX1. Graph $f(x) = 2^x + 1$

Shift up by 1



x-values

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

y-values

range: $(1, \infty)$

horizontal asymptote:

$y = 1$

end behavior:

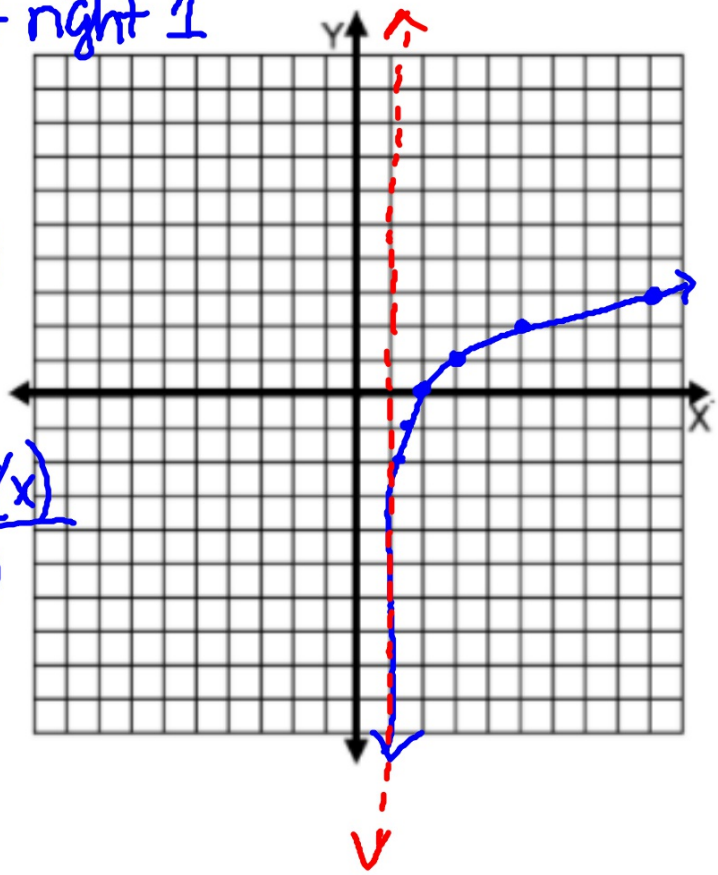
x	f(x)
0	2
1	3
2	5
3	9
-1	$\frac{3}{2}$
-2	$\frac{5}{4}$

EX2. Graph $f(x) = log_2(x-1)$ Shift right 1

Domain: $(1, \infty)$ range: $(-\infty, \infty)$

vertical asymptote: $x = 1$

end behavior:



x	f(x)
2	0
3	1
5	2
9	3
$\frac{3}{2}$	-1
$\frac{5}{4}$	-2

EX3. Graph $f(x) = 3^{x+1}$

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

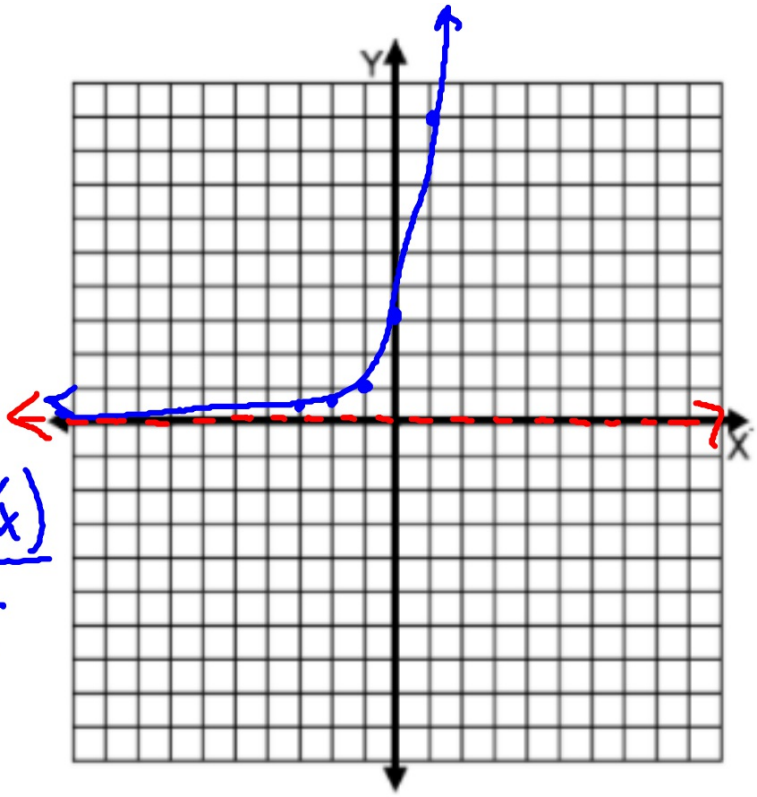
range: $(0, \infty)$

horizontal asymptote:

$y = 0$

end behavior:

x	$f(x)$
-3	$\frac{1}{9}$
-2	$\frac{1}{3}$
-1	1
0	3
1	9
2	27



EX4. Graph: $f(x) = \log_3 x + 3$

Domain: $(0, \infty)$

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

vertical asymptote: $x = 0$

end behavior:

x	f(x)
0	1
6	2
24	3