

Algebra 2 Honors

Name _____

Notes/Guided Practice: 4.7 Transforming Exponential and Logarithmic Functions

For each function, identify the parent function and three key points located on the parent function. Then, describe how the graph is transformed from the graph of its parent function. Use this information to graph each function.

1. $g(x) = 2^{-x} + 1$

HA: $y = 0$

x	Parent Function $f(x) = 2^x$	x	$g(x)$
0	1	0	2
1	2	-1	3
2	4	-2	5

vertical shift up 1
reflection in y-axis

H.A: $y = 1$

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

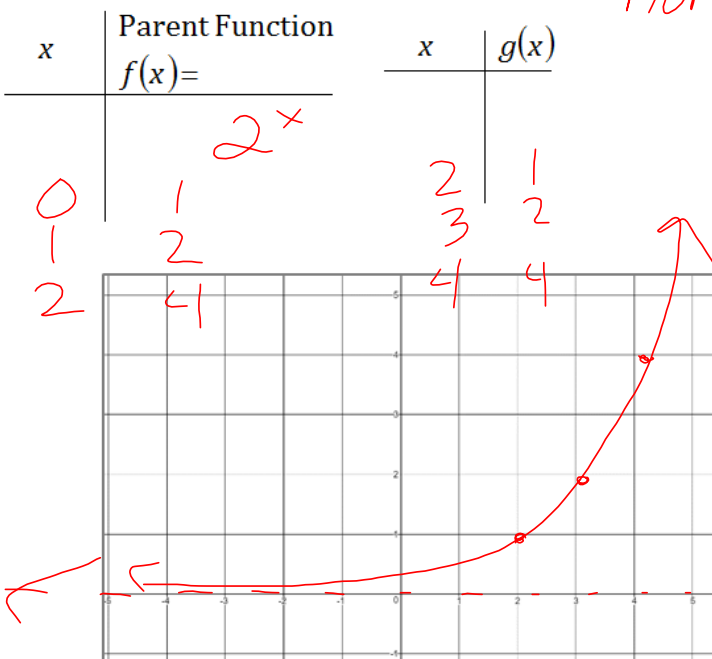
R: $(1, \infty)$



x	-1	0	1	2
$f(x) = b^x$	$\frac{1}{b}$	1	b	b^2

2. $g(x) = 2^{x-2}$

horizontal shift
right 2



HA: $y = 0$

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

R: $(0, \infty)$

3. $g(x) = e^{-x+1}$

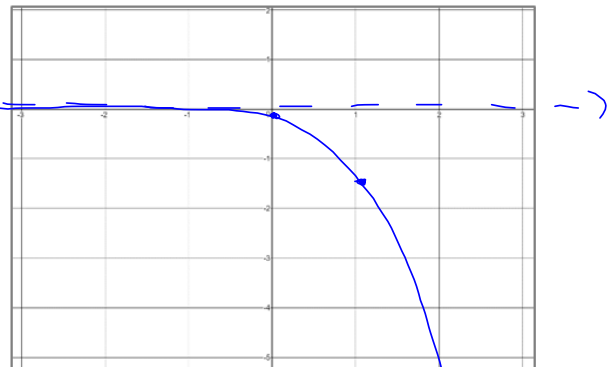
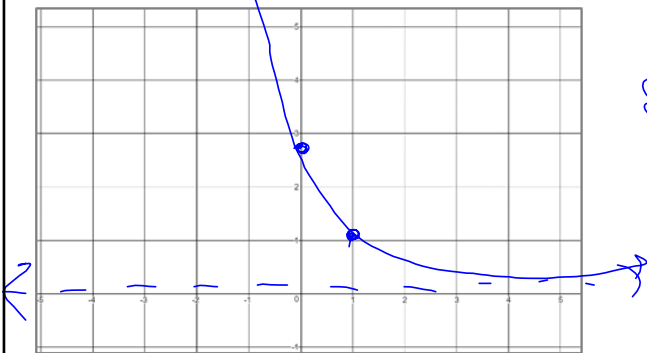
$g(x) = e^{-(x-1)}$

4. $g(x) = -\frac{1}{3}(5^x)$

• reflection in x-axis
• vertical comp. by $\frac{1}{3}$

x	Parent Function $f(x) = e^x$	x	$g(x)$
0	1	1	1
1	e	0	e
2	e^2	-1	e^2

x	Parent Function $f(x) = 5^x$	x	$g(x)$
0	1	0	$-\frac{1}{3}$
1	5	1	$-\frac{5}{3}$
2	25	2	$-\frac{25}{3}$



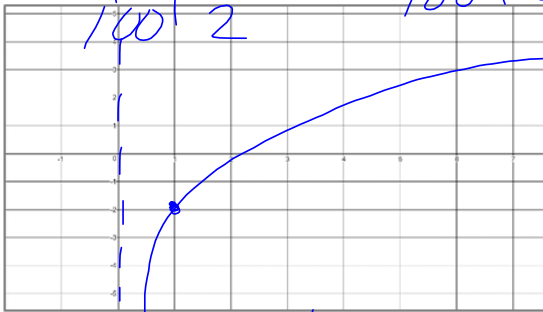
reflection in y-axis
hor. shift right 1
HA $y=0$

HA: $y=0$
D: $(-\infty, \infty)$ R: $(-\infty, 0)$

$f^{-1}(x) = 10^x$

5. $g(x) = 5 \log x - 2$

x	Parent Function $f(x) = \log_{10} x$	x	$g(x)$
1/10	-1	1/10	-7
1	0	1	-2
10	1	10	3
100	2	100	8



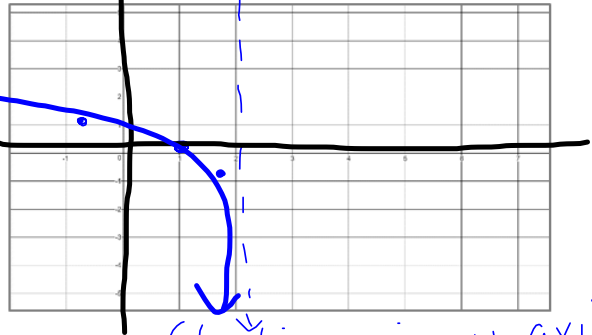
vertical shift down 2
vert. str. by 5
V.A. $x = 0$

$D: (0, \infty)$
 $R: (-\infty, \infty)$

$g(x) = \ln[-(x-2)]$

6. $g(x) = \ln(-x+2)$

x	Parent Function $f(x) = \ln x$	x	$g(x)$
1/e	-1	1/e+2	-1
1	0	1+2	0
e	1	e+2	1
e^2	2	e^2+2	2



reflection in y-axis
hor. shift right 2
V.A. $x = 2$

$D: (-\infty, 2)$
 $R: (-\infty, \infty)$

x	1/b	1	b	b^2
$f(x) = \log_b x$	-1	0	1	2