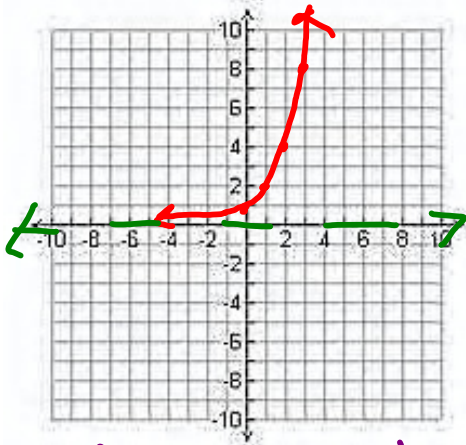


Graph the function and analyze it for domain, range, increasing or decreasing behavior, asymptotes and end behavior. Give a parent function and describe in words the transformation.

1.  $f(x) = 2^x$

x	y
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	8



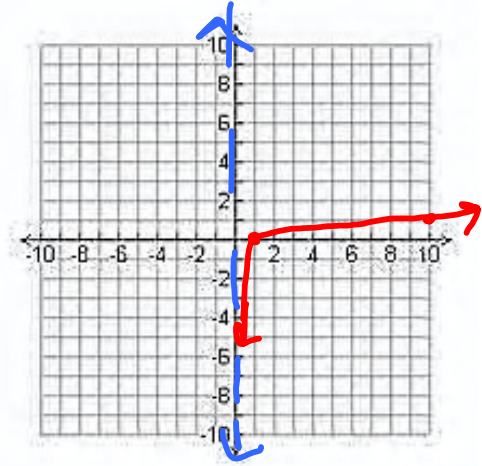
Domain:  $(-\infty, \infty)$  Range:  $(0, \infty)$

Increasing or Decreasing (circle one): Increasing

Asymptote:  $y=0$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = \infty$   
 $\lim_{x \rightarrow -\infty} f(x) = 0$

2.  $f(x) = \log x$

x	y
1	0
10	1



Domain:  $(0, \infty)$  Range:  $(-\infty, \infty)$

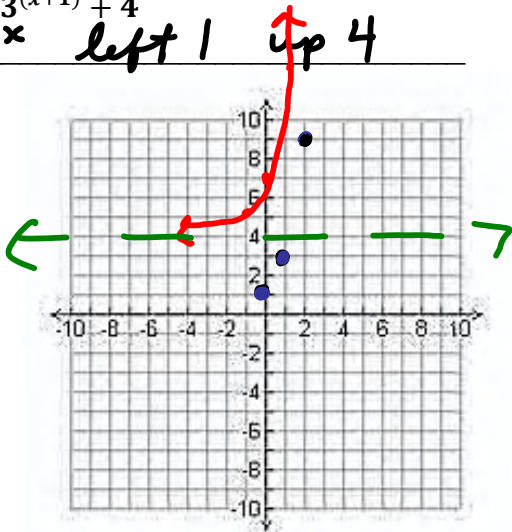
Increasing or Decreasing (circle one): Increasing

Asymptote:  $x=0$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = \infty$   
 $\lim_{x \rightarrow 0^+} f(x) = -\infty$

3.  $f(x) = 3^{(x+1)} + 4$

$f(x) = 3^x$  left 1 up 4

x	y
-2	5
-1	7
0	13
1	13



Domain:  $(-\infty, \infty)$  Range:  $(4, \infty)$

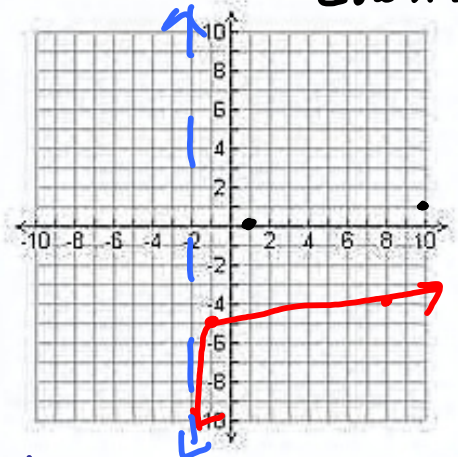
Increasing or Decreasing (circle one): Increasing

Asymptote:  $y=4$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = \infty$   
 $\lim_{x \rightarrow -\infty} f(x) = 4$

4.  $f(x) = \log(x+2) - 5$

$f(x) = \log x$  shifted Left 2 down 5

x	y
-1	-5
8	-4



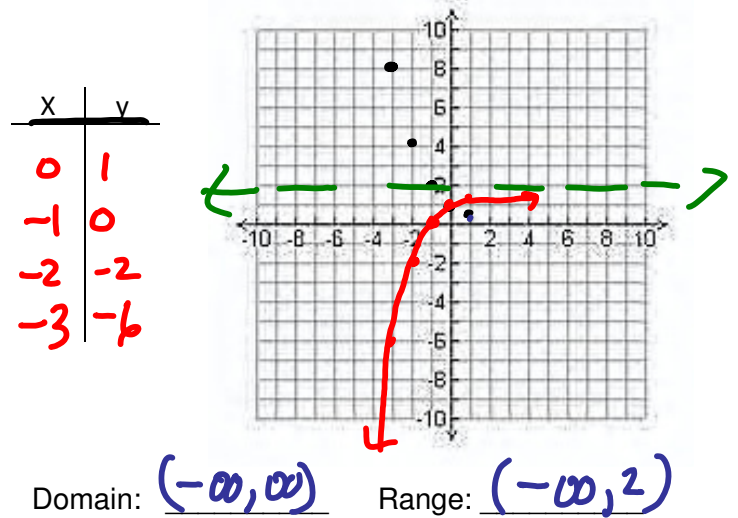
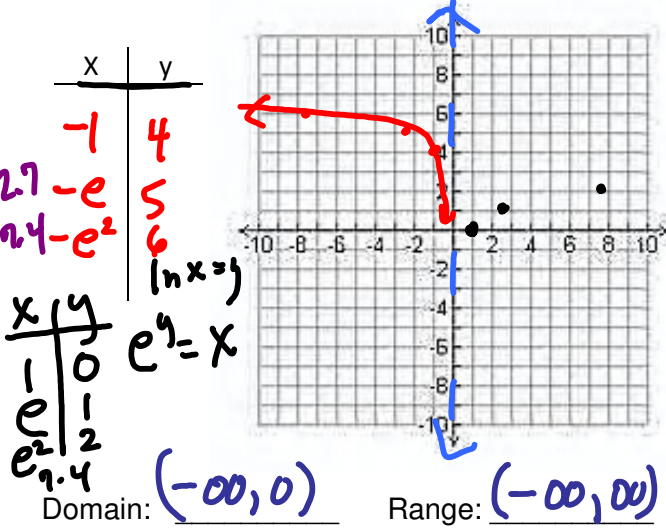
Domain:  $(-2, \infty)$  Range:  $(-\infty, \infty)$

Increasing or Decreasing (circle one): Increasing

Asymptote:  $x=-2$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = \infty$   
 $\lim_{x \rightarrow -2^+} f(x) = -\infty$

5.  $f(x) = \ln(-x) + 4$  reflect over y axis  
 $f(x) = \ln x$  shift up 4

6.  $f(x) = -1 \cdot \frac{1}{2}^x + 2$  reflect over x axis  
 $f(x) = \frac{1}{2}^x$  up 2

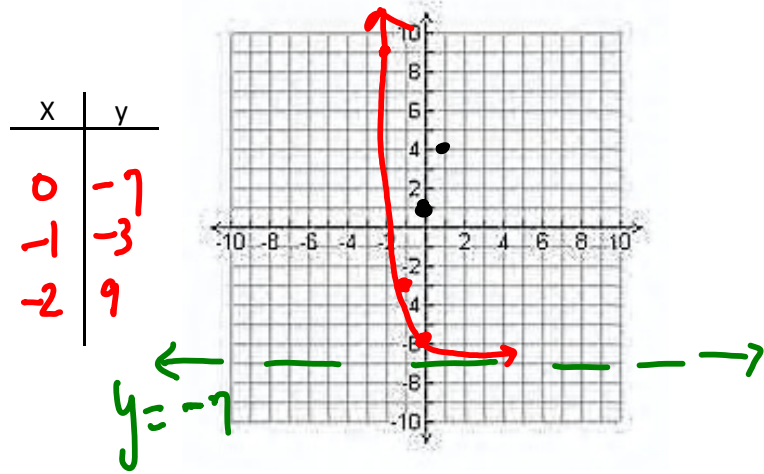
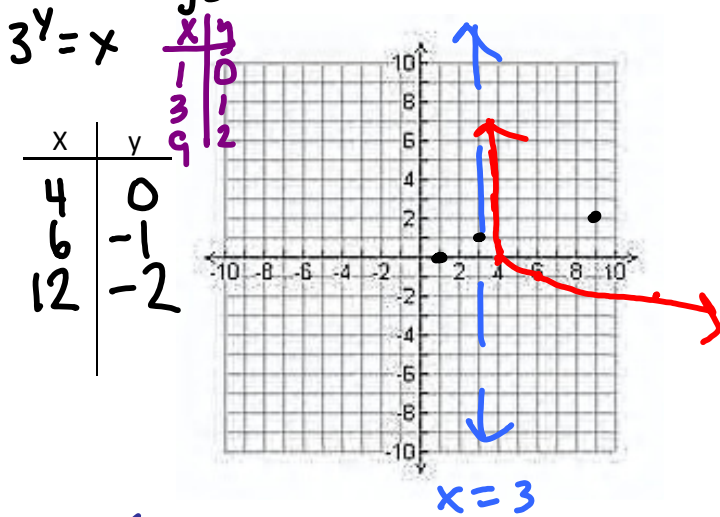


Increasing or Decreasing (circle one):  $(-\infty, 0)$   
 Asymptote:  $x=0$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = -\infty$   
 $\lim_{x \rightarrow -\infty} f(x) = \infty$

Increasing or Decreasing (circle one):  $(-\infty, \infty)$   
 Asymptote:  $y=2$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = 2$   
 $\lim_{x \rightarrow -\infty} f(x) = -\infty$

7.  $f(x) = -1 \cdot \log_3(x-3)$  reflect over x axis  
 $f(x) = \log_3 x$  - reflect over x axis

8.  $f(x) = 4^{-x} - 7$  reflect over y axis  
 $f(x) = 4^x$  down 7



Increasing or Decreasing (circle one):  $(3, \infty)$   
 Asymptote:  $x=3$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = -\infty$   
 $\lim_{x \rightarrow -\infty} f(x) = \infty$

Increasing or Decreasing (circle one):  $(-\infty, \infty)$   
 Asymptote:  $y=-7$  End behavior:  $\lim_{x \rightarrow \infty} f(x) = -7$   
 $\lim_{x \rightarrow -\infty} f(x) = \infty$