

CCGPS A  
Linear and Exponential Functions

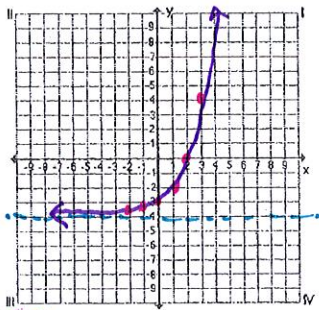
Name key

Graph the following by using transformations from the 'parent' graph. Graph 'parent points' in pencil and then apply transformation. Connect new points with curve.

1.  $y = 2^x - 4$

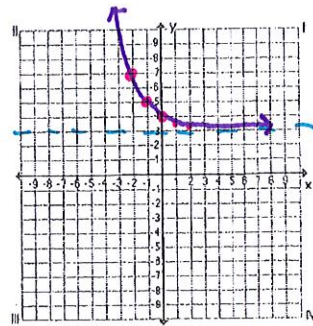
X	Y
-2	-3.75
-1	-3.5
0	-3
1	-2
2	0
3	4

y-int  $(0, -3)$   
 asymp  $y = -4$   
 dom  $(-\infty, \infty)$   
 range  $(-4, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow -\infty, y \rightarrow -4$   
 as  $x \rightarrow \infty, y \rightarrow \infty$



2.  $y = \left(\frac{1}{2}\right)^x + 3$

y-int  $(0, 4)$   
 asymp  $y = 3$   
 dom  $(-\infty, \infty)$   
 range  $(3, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow -\infty, y \rightarrow \infty$   
 as  $x \rightarrow \infty, y \rightarrow 3$

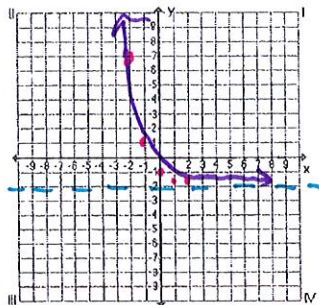


X	Y
-2	7
-1	5
0	4
1	3.5
2	3.25

3.  $y = \left(\frac{1}{3}\right)^x - 2$

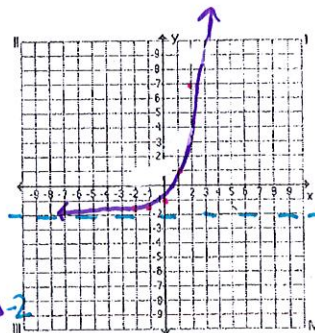
X	Y
-2	7
-1	1
0	-1
1	-1.7
2	-1.9

y-int  $(0, -1)$   
 asymp  $y = -2$   
 dom  $(-\infty, \infty)$   
 range  $(-2, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow \infty, y \rightarrow -2$   
 as  $x \rightarrow -\infty, y \rightarrow \infty$



4.  $y = 3^x - 2$

y-int  $(0, -1)$   
 asymp  $y = -2$   
 dom  $(-\infty, \infty)$   
 range  $(-2, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow \infty, y \rightarrow \infty$   
 as  $x \rightarrow -\infty, y \rightarrow -2$

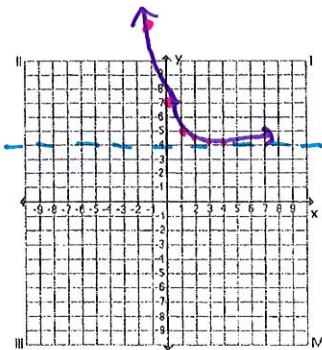


X	Y
-2	7
-1	1
0	-1
1	1
2	7

5.  $y = 3\left(\frac{1}{3}\right)^x + 4$

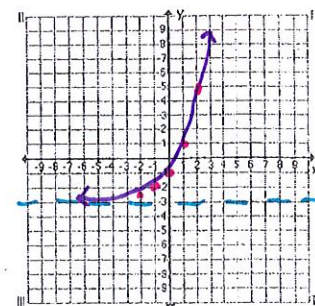
X	Y
-1	13
0	7
1	5
2	4.33
3	4.11
4	4.037

y-int  $(0, 7)$   
 asymp  $y = 4$   
 dom  $(-\infty, \infty)$   
 range  $(4, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow -\infty, y \rightarrow \infty$   
 as  $x \rightarrow \infty, y \rightarrow 4$



6.  $y = 2(2^x) - 3$

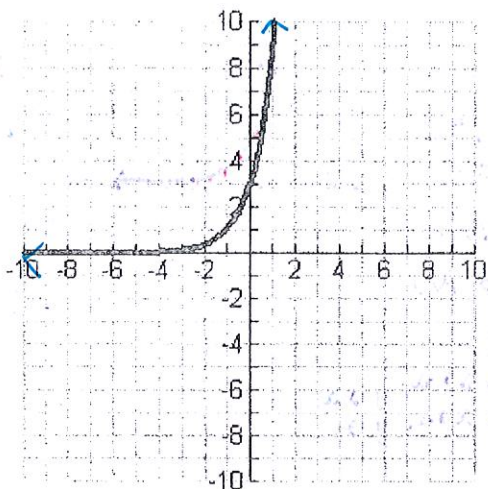
y-int  $(0, -1)$   
 asymp  $y = -3$   
 dom  $(-\infty, \infty)$   
 range  $(-3, \infty)$   
 growth/decay  
 e.b. as  $x \rightarrow -\infty, y \rightarrow -3$   
 as  $x \rightarrow \infty, y \rightarrow \infty$



X	Y
-2	7
-1	5
0	1
1	1
2	5

Analyzing Growth and Decay Exponential Functions

1.  $y = 3^{x+1}$



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

Range:  $(0, \infty)$

Asymptotes:  $y = 0$

Zeros: none

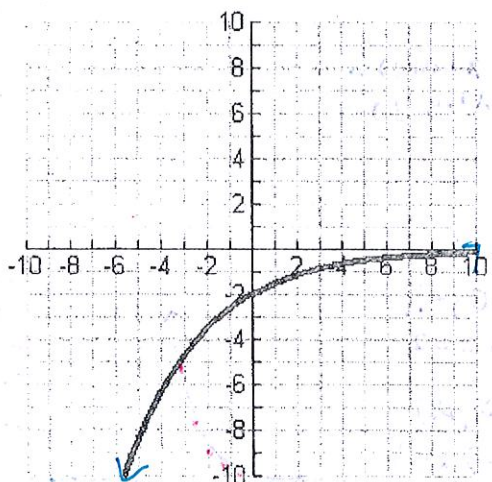
y-Intercepts:  $(0, 3)$

Intervals of increase and decrease

↓  
 $(-\infty, \infty)$

↓  
none

2.  $y = -2\left(\frac{3}{4}\right)^x$



Domain  $(-\infty, \infty)$

Range:  $(-\infty, 0)$

Asymptotes:  $y = 0$

Zeros: none

y-Intercepts:  $(0, -2)$

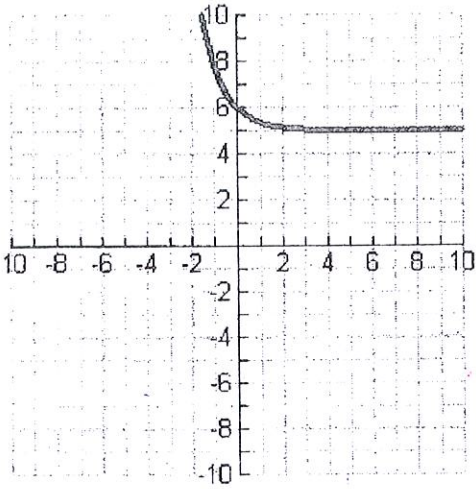
Intervals of increase and decrease

↓  
 $(-\infty, \infty)$

↓  
none



3.  $y = \left(\frac{1}{3}\right)^x + 5$



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

Range:  $(5, \infty)$

Asymptotes:  $y = 5$

Zeros: none

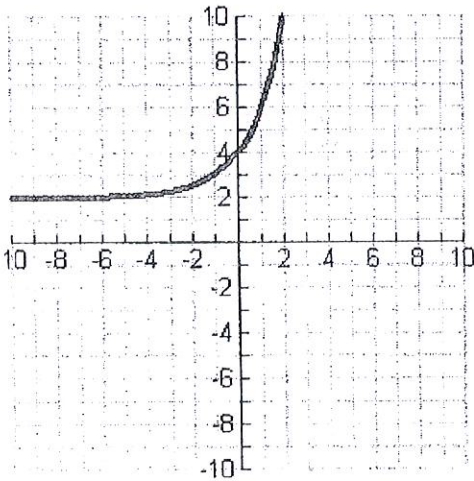
y-Intercepts:  $(0, 6)$

Intervals of increase and decrease

↓  
none

↓  
 $(-\infty, \infty)$

4.  $y = 2^{x+1} + 2$



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

Range:  $(2, \infty)$

Asymptotes:  $y = 2$

Zeros: none

y-Intercepts:  $(0, 4)$

Intervals of increase and decrease

↓  
 $(-\infty, \infty)$

↓  
none