

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

# Homework Problem Set

Write the parent function for each of the following. Then, describe in words what the transformation would be for the new graph.

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

$f(x) = 3^x$

- Translate Horizontally right 2

2.  $g(x) = \left(\frac{1}{2}\right)^x - 4$

$g(x) = \left(\frac{1}{2}\right)^x$

- Translate vertically down 4

3.  $h(x) = 3 \cdot 2^x + 1$

$h(x) = 2^x$

- Vertical Stretch by 3
- Translate vertically up 1

4.  $j(x) = -5^{x+2}$

$j(x) = 5^x$

- Translate horizontally left 2
- Reflect over x-axis

5.  $k(x) = \frac{1}{3} \cdot 4^x + 7$

$k(x) = 4^x$

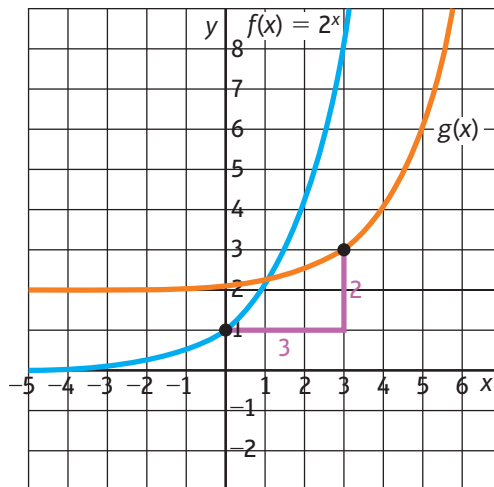
- vertical shrink by  $\frac{1}{3}$
- Translate vertically up 7

6.  $l(x) = \left(\frac{2}{3}\right)^{x-9} - 10$

$l(x) = \left(\frac{2}{3}\right)^x$

- Translate horizontally right 9
- Translate vertically down 10

7. The graph for  $f(x) = 2^x$  is shown below. The function  $g(x)$  is also shown. What is the equation for  $g(x)$ ?



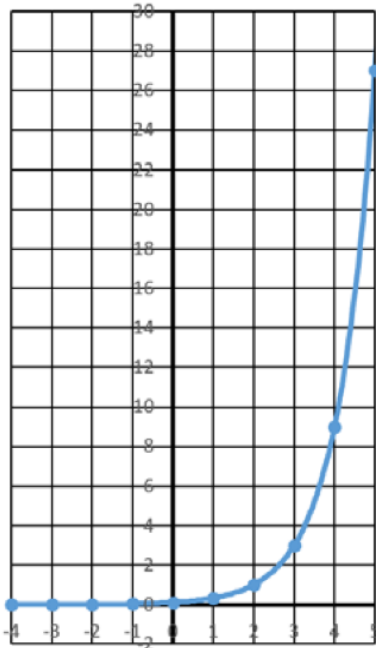
→ 3 ↑ 2

Translate right 3  
Translate up 2

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

Graph each of the following exponential functions. Then state the domain and range.

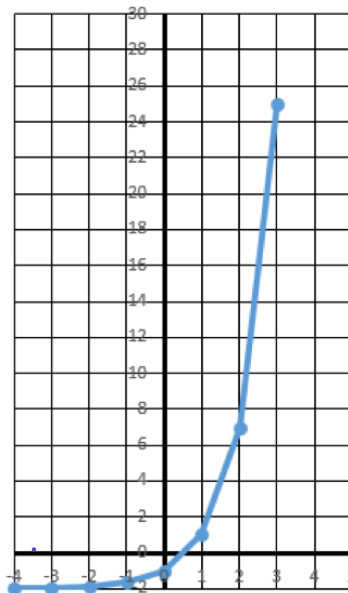
8.  $y = 3^{x-2}$



X	Y
0	1/9
1	1/3
2	1
3	3
4	9
5	27

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

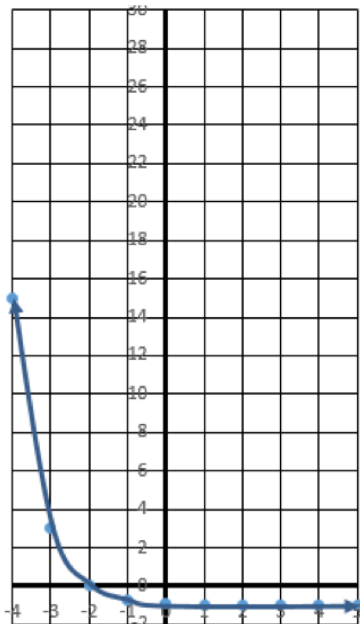
9.  $y = 3^x - 2$



X	Y
-1	-1
0	-1
1	1
2	7
3	25

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

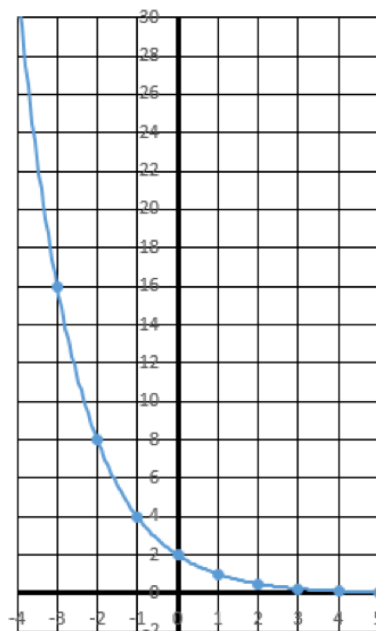
10.  $y = \frac{1}{4}^{x+2} - 1$



X	Y
-1	1/4
-2	0
-3	3/4
-4	15/16

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

11.  $y = 2 \cdot \frac{1}{2}^x$

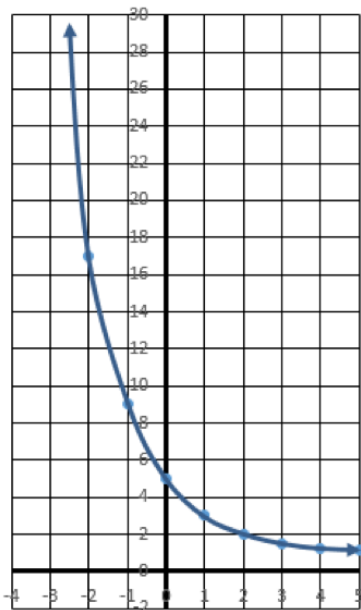


X	Y
2	1/2
1	1
0	2
-1	4
-2	8
-3	16

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

Lesson 28 Focus on Exponential Transformations

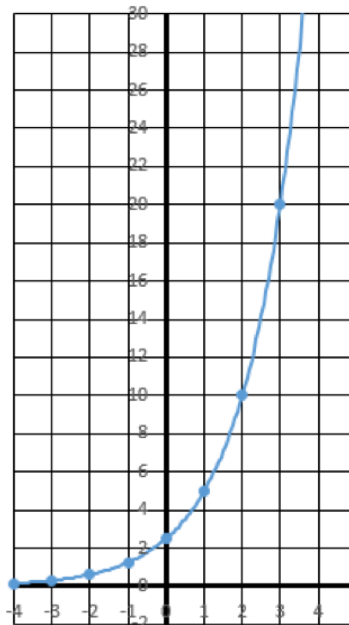
12.  $y = 4 \cdot \frac{1}{2}^x + 1$



X	Y
-2	17
-1	9
0	5
1	3
2	2
3	1.5
4	1.25

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

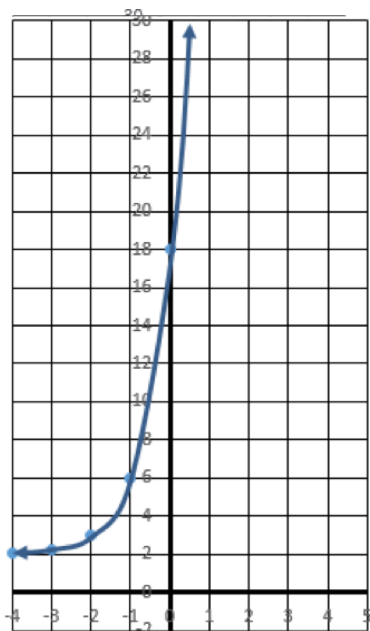
13.  $y = 5 \cdot 2^{x-1}$



X	Y
-2	0.625
-1	1.25
0	2.5
1	5
2	10
3	20
4	40

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

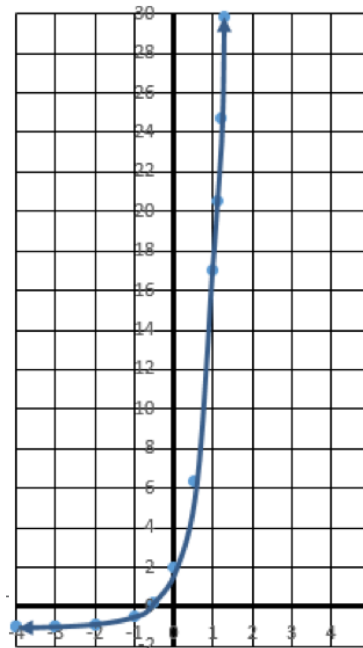
14.  $y = 4^{x+2} + 2$



X	Y
-4	2
-3	6
-2	18
-1	34
0	66
1	130
2	266

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

15.  $y = \frac{1}{2} \cdot 6^{x+1} - 1$



X	Y
-3	-0.5
-2	0.5
-1	2
0	4
1	17
2	46

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