

7.1-7.2 Homework

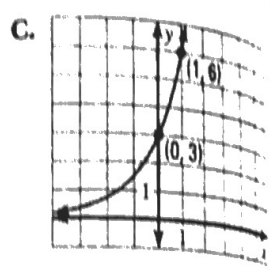
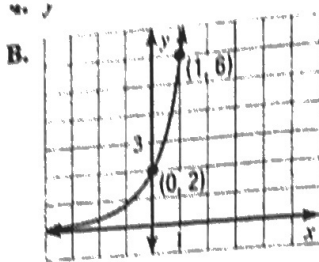
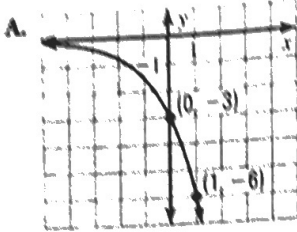
Name Key

Match the function with its graph (1-3):

1.  $y = 3 \cdot 2^x$  C

2.  $y = -3 \cdot 2^x$  A

3.  $y = 2 \cdot 3^x$  B

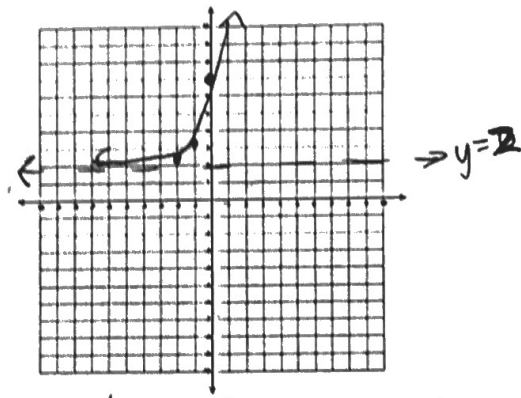
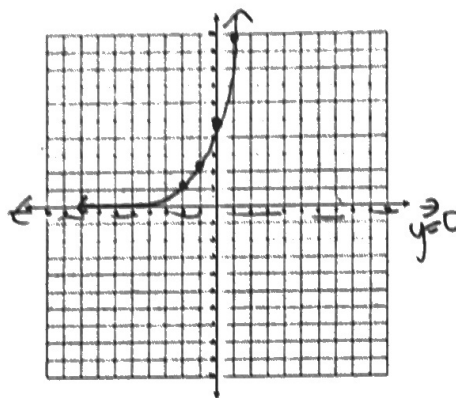
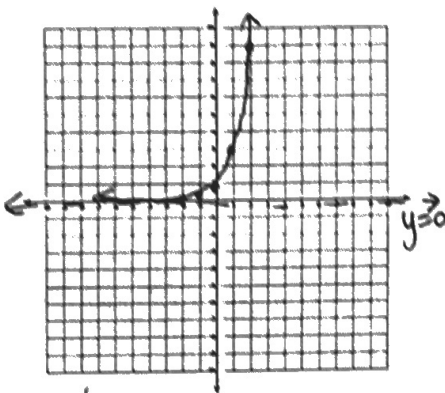


Graph the following functions and state the domain and range:

4.  $y = 3^x$

5.  $y = 5 \cdot 2^x$

6.  $y = 5 \cdot 4^x + 2$



x	-2	-1	0	1	2
y	1/9	1/3	1	3	9

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

x	-2	-1	0	1	2
y	1.25	2.5	5	10	20

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

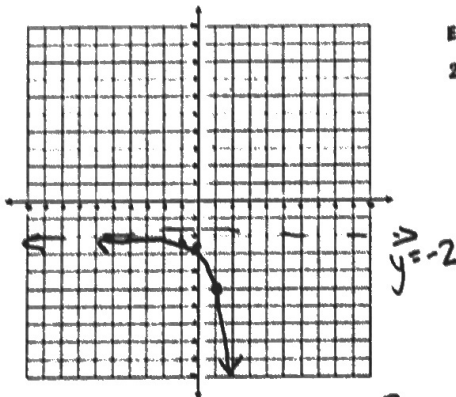
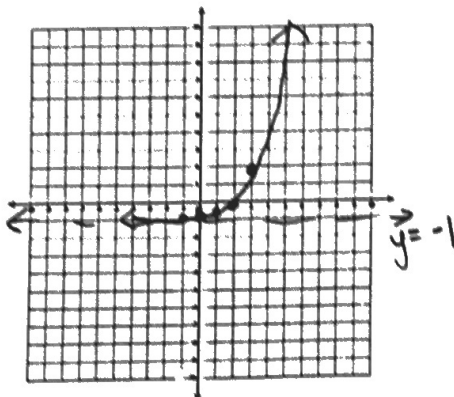
x	-2	-1	0	1	2
y	2.3	3.25	7	22	82

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

7.  $y = 3^{x-2} - 1$

8.  $y = -3 \cdot 4^{x-1} - 2$

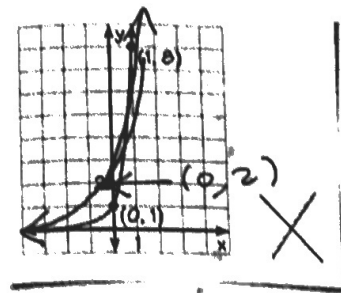
9.



ERROR ANALYSIS Describe and correct the error

26.  $y = 2 \cdot 4^x$

2



y-int is at (0, 2)

x	-1	0	1	2	3
y	-9.6	-8.9	-2/3	0	2

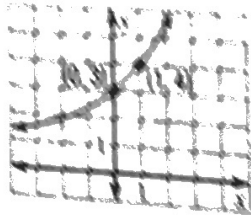
D:  $(-\infty, \infty)$   
R:  $(-1, \infty)$

x	-1	0	1	2	3
y	-2.2	-2.75	-5	-14	-50

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

10. MULTIPLE CHOICE The graph of which function is shown?

- A  $f(x) = 2(1.5)^x - 1$
- B  $f(x) = 2(1.5)^x + 1$
- C  $f(x) = 3(1.5)^x - 1$
- D  $f(x) = 3(1.5)^x + 1$



11. You deposit \$800 in an account that pays 2% annual interest compounded daily. Write an exponential growth model that describes the situation.

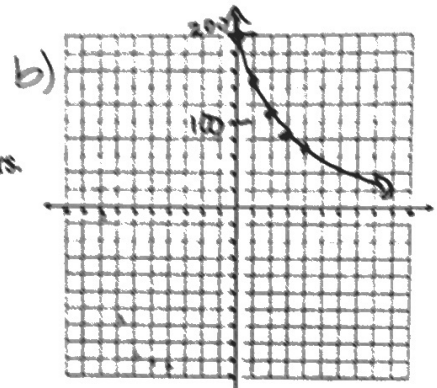
$$y = 800 \left( 1 + \frac{0.02}{365} \right)^{365t}$$

12. BIKE COSTS You buy a new mountain bike for \$200. The value of the bike decreases by 25% each year.

- a. Write a model giving the mountain bike's value  $y$  (in dollars) after  $t$  years. Use the model to estimate the value of the bike after 3 years.
- b. Graph the model.
- c. Estimate when the value of the bike will be \$100.

a)  $y = 200(1 - 0.25)^t$     \$84.38

c) when  $t = 2.5$  years ← use calculator



x	0	1	2	3	4
y	200	150	112.5	84.38	63.28

Tell whether the function represents exponential growth or exponential decay (13-16):

13.  $f(x) = 3\left(\frac{3}{4}\right)^x$

decay

14.  $f(x) = 4\left(\frac{5}{2}\right)^x$

growth

15.  $f(x) = \frac{2}{7} \cdot 4^x$

growth

16.  $f(x) = 25(0.25)^x$

decay

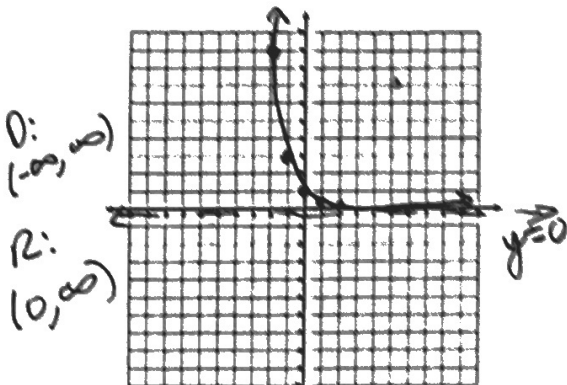
Graph the following functions and state the domain and range (17-19):

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

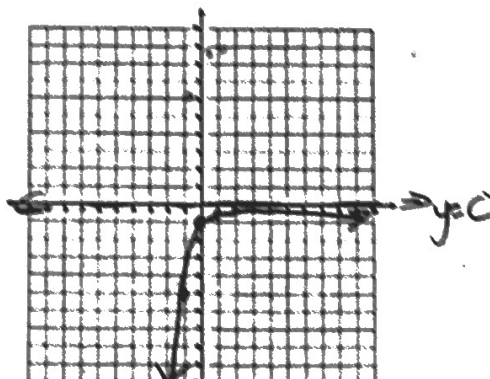
18.  $y = -(0.2)^x$

19.  $h(x) = -3\left(\frac{3}{8}\right)^x$

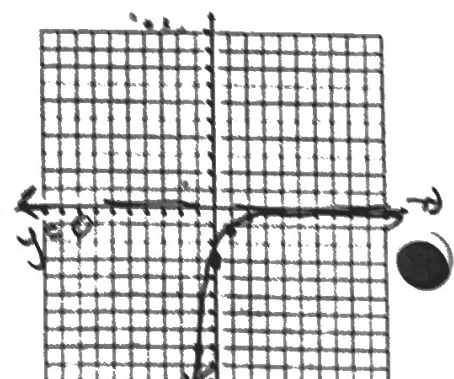
D:  $(-\infty, \infty)$   
R:  $(-\infty, 0)$



x	-2	-1	0	1	2
y	9	3	1	1/3	1/9



x	-2	-1	0	1	2
y	-25	-5	-1	-0.2	-0.04

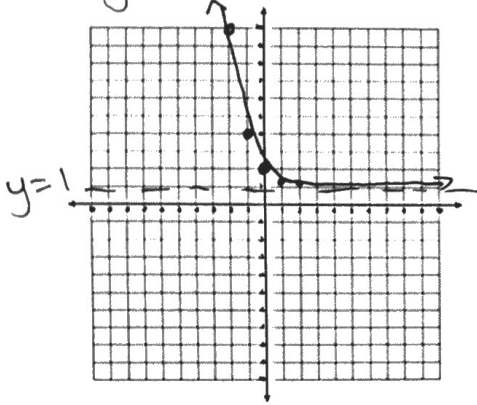


x	-2	-1	0	1	2
y	-21.33	-8	-3	-1.13	-0.4

**TRANSLATING GRAPHS** Graph the function. State the domain and range.

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

x	-2	-1	0	1	2
y	10	4	2	1.33	1.11



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

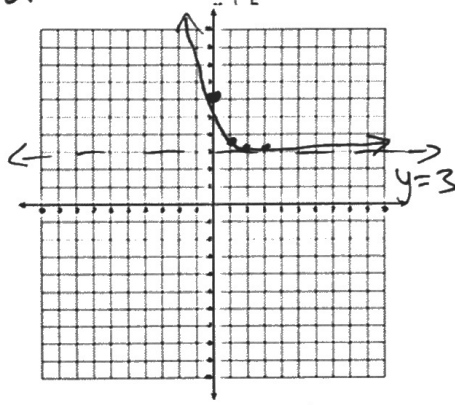
R:  $(1, \infty)$

22  $y = 3(0.25)^x + 3$

x	-1	0	1	2	3
y	15	6	3.75	3.19	3.05

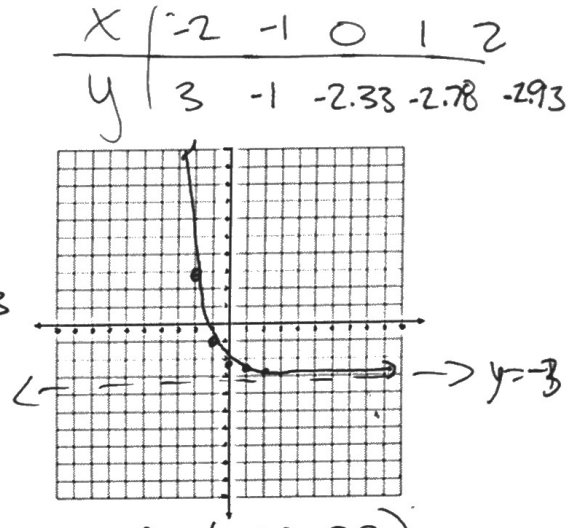
23  $y = 2\left(\frac{1}{3}\right)^{x+1} - 3$

x	-2	-1	0	1	2
y	3	-1	-2.33	-2.78	-2.93



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

R:  $(3, \infty)$



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

R:  $(-3, \infty)$

25. **GRAPHING CALCULATOR** Consider the exponential decay function  $y = ab^{x-h} + k$  where  $a = 3$ ,  $b = 0.4$ ,  $h = 2$ , and  $k = -1$ . Predict the effect on the function's graph of each change in  $a$ ,  $b$ ,  $h$ , or  $k$  described in parts (a)-(d). Use a graphing calculator to check your prediction.

a.  $a$  changes to 4 <sup>vertical</sup> stretch by  $4/3$

c.  $h$  changes to 5 right 3

b.  $b$  changes to 0.2 steeper (smaller decay factor)

d.  $k$  changes to 3 up 4 (asymptote at  $y = 3$ )