

## EXPONENTIAL FUNCTIONS (CONT.)

### REVIEW:

① WRITE  $3x + 2y = 13$  IN SLOPE-INTERCEPT FORM.

$$y =$$

② WHAT IS THE SLOPE OF ANY LINE PERPENDICULAR TO  $3x - 4y = 12$ ?

$$m =$$

③ THE TABLE BELOW GIVES POINTS FROM A LINEAR FUNCTION,  $f(x)$ . WRITE THE EQUATION OF THE FUNCTION.

x	1	2	3	5
f(x)	3	5	7	11

$$f(x) =$$

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GIVEN THE FUNCTION  $f(x) = 3 \cdot 2^x$ , COMPLETE THE TABLE:

x	0	1	2	3
f(x)				

WHAT TYPE OF FUNCTION IS  $f(x)$ ?

DOES IT HAVE A CONSTANT RATE OF CHANGE?

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APPLICATION. WRITE AN EQUATION FOR THE FUNCTION SHOWN IN THE TABLE.

x	0	1	2	3	4
g(x)	8	4	2	1	$\frac{1}{2}$

$$g(x) =$$

APPLICATION. FOR EACH OF THE FOLLOWING TABLES,  
DETERMINE IF THE FUNCTION IS LINEAR OR EXPONENTIAL.  
THEN GIVE THE EQUATION OF THE FUNCTION.

①

x	0	1	2	3
f(x)	8	29	50	71

f(x) =

②

x	0	1	2	3
g(x)	8	16	32	64

g(x) =

③

x	2	4	6	8
h(x)	-9	-17	-25	-33

h(x) =

④

x	1	2	3	4
k(x)	15	45	135	405

k(x) =

RECAP :

\* LINEAR FUNCTIONS HAVE A CONSTANT RATE OF CHANGE.

$$\text{RATE OF CHANGE} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y\text{-INTERCEPT} = (0, b)$$

\* EXPONENTIAL FUNCTIONS DO NOT HAVE A CONSTANT RATE OF CHANGE.

$$\text{GROWTH/DECAY RATE} = \frac{\text{"NEXT Y-VALUE"}}{\text{"PREVIOUS Y-VALUE"}}$$

$$y\text{-INTERCEPT} = (0, b)$$

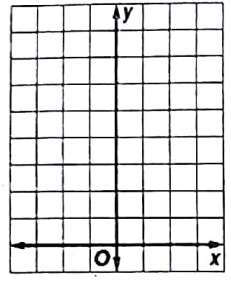
# 7-5 Skills Practice

## Exponential Functions

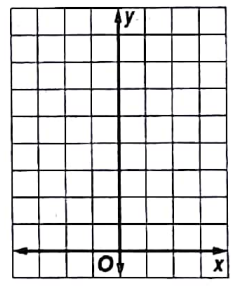
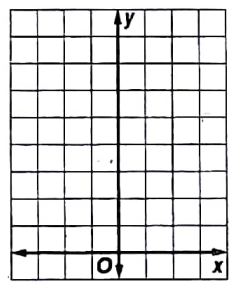
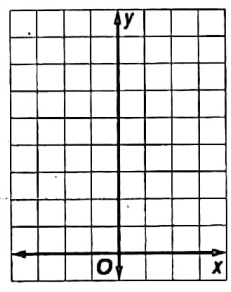
Graph each function. Find the y-intercept, and state the domain and range. + **EDD**

**BEHAVIOR.**

1.  $y = 2^x$



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



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

4.  $y = 3^x + 2$

Determine whether the set of data shown below displays exponential behavior. Write *yes* or *no*. Explain why or why not.

5.

x	-3	-2	-1	0
y	9	12	15	18

6.

x	0	5	10	15
y	20	10	5	2.5

7.

x	4	8	12	16
y	20	40	80	160

8.

x	50	30	10	-10
y	90	70	50	30

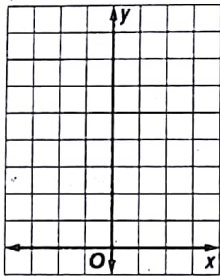
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**7-5 Practice**

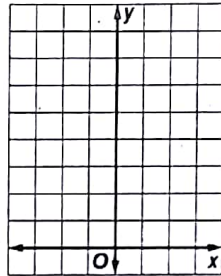
**Exponential Functions**

Graph each function. Find the y-intercept and state the domain and range. + **END BEHAVIOR.**

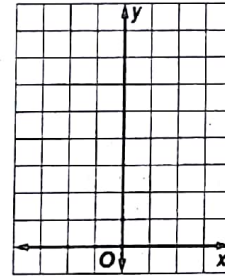
1.  $y = \left(\frac{1}{10}\right)^x$



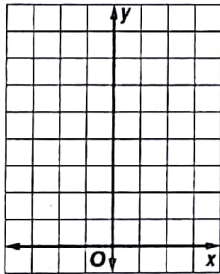
2.  $y = 3^x$



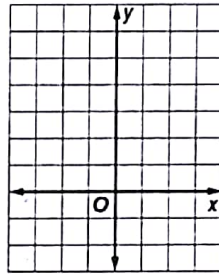
3.  $y = \left(\frac{1}{4}\right)^x$



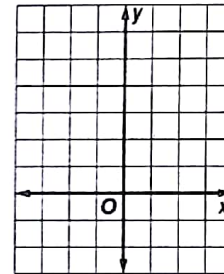
4.  $y = 4(2^x) + 1$



5.  $y = 2(2^x - 1)$



6.  $y = 0.5(3^x - 3)$



Determine whether the set of data shown below displays exponential behavior. Write *yes* or *no*. Explain why or why not.

7.

<i>x</i>	2	5	8	11
<i>y</i>	480	120	30	7.5

8.

<i>x</i>	21	18	15	12
<i>y</i>	30	23	16	9

9. **LEARNING** Ms. Klemperer told her English class that each week students tend to forget one sixth of the vocabulary words they learned the previous week. Suppose a student learns 60 words. The number of words remembered can be described by the function  $W(x) = 60\left(\frac{5}{6}\right)^x$ , where  $x$  is the number of weeks that pass. How many words will the student remember after 3 weeks?

10. **BIOLOGY** Suppose a certain cell reproduces itself in four hours. If a lab researcher begins with 50 cells, how many cells will there be after one day, two days, and three days? (*Hint:* Use the exponential function  $y = 50(2^x)$ .)