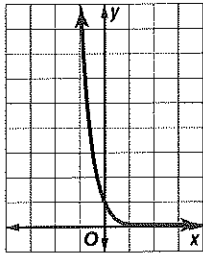## 7-5 Practice

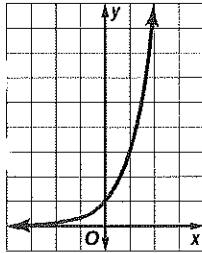### Exponential Functions

Graph each function. Find the *y*-intercept and state the domain and range.
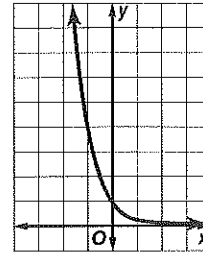
1. $y = \left(\dfrac{1}{10}\right)^x$

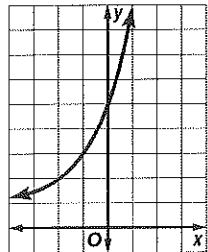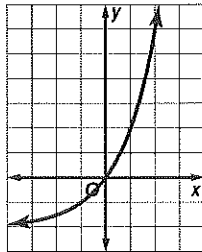**2.** $y = 3^x$
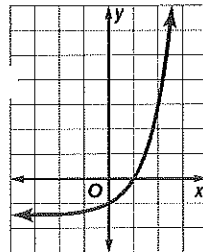
3. $y = \left(\dfrac{1}{4}\right)^x$

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.

x	2	5	8	11
y	480	120	30	7.5

8.

x	21	18	15	12
y	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 $W(x) = 60\left(\dfrac{5}{6}\right)^x$, 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 $y = 50(2^x)$.)
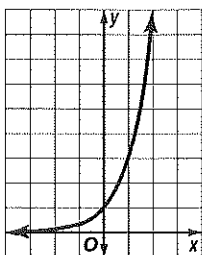
7-5 Practice

Exponential Functions

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

1. $y = \left(\frac{1}{10}\right)^x$
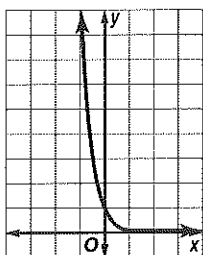
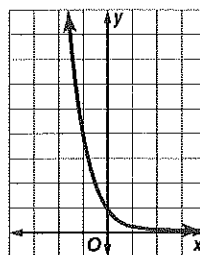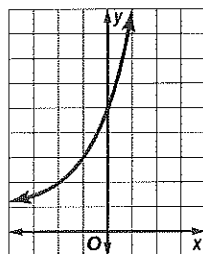1; D = {all real numbers};

R = { y | y > 0}

2. $y = 3^x$

1; D = {all real numbers};
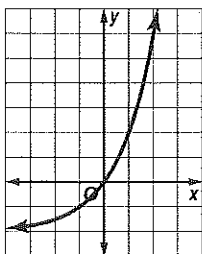
R = { y | y > 0}

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

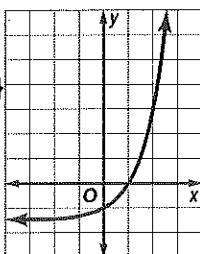1; D = {all real numbers};

R = { y | y > 0}

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

5; D = {all real numbers}; R = { y|y > 1}

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

0; D = {all real numbers}; R = { y|y > -2}

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

−1; D = {all real numbers}; R = { y|y > −1.5}

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

7.

x	2	5	8	11
y	480	120	30	7.5

Yes; the domain values are at regular intervals and the range values have a common factor 0.25.

8.

x	21	18	15	12
y	30	23	16	9

No; the domain values are at regular intervals and the range values have a common difference 7.

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? **about 35**

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 $y = 50(2^x)$.)
3200 cells; 204,800 cells; 13,107,200 cells