

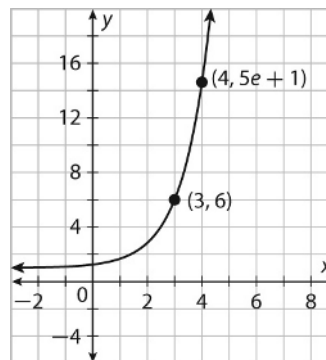
**LESSON**  
**13-3**

# The Base e

## Reteach

Using reference points, you can find the function for a graph of the form  $g(x) = a \cdot e^{x-h} + k$ .

**Example** Write the function whose graph is shown.



**Step 1:** Use the first labeled reference point to find  $h$ .

$$(h, a + k) = (3, 6)$$

$$h = 3$$

**Step 2:** Use the second labeled reference point to find  $a$  and  $k$ .

$$(1 + h, ae + k) = (4, 5e + 1)$$

$$ae + k = 5e + 1$$

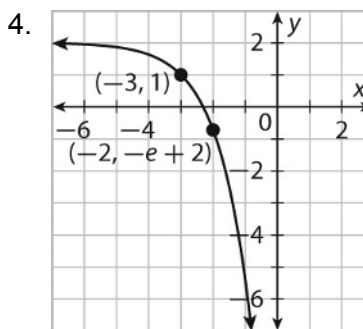
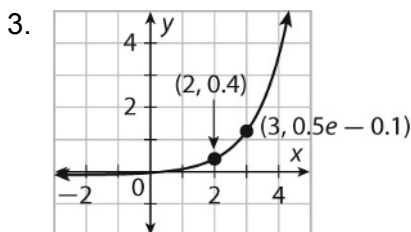
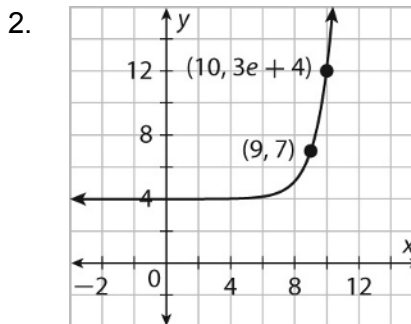
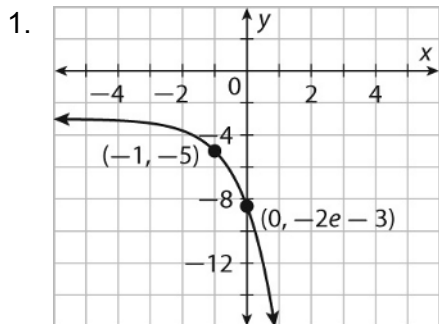
$$a = 5$$

$$k = 1$$

**Step 3:** Write the equation using  $a$ ,  $h$ , and  $k$ .

$$g(x) = 5e^{x-3} + 1$$

Write the function whose graph is shown.



### Reteach 13-2

1.  $f(x) = \left(\frac{1}{2}\right)^x$ ;  $b = \frac{1}{2}$ ;  $y = -2$ ; (3, 2), (2, 6)
2.  $f(x) = \left(\frac{1}{10}\right)^x$ ;  $b = \frac{1}{10}$ ;  $y = 1$ ; (-2, 8), (-3, 71)
3.  $f(x) = 0.3^x$ ;  $b = 0.3$ ;  $y = -3$ ; (-3, 3), (-4, 17)
4.  $f(x) = \left(\frac{1}{4}\right)^x$ ;  $b = \frac{1}{4}$ ;  $y = -5$ ; (6, -6), (5, -9)
5.  $f(x) = \left(\frac{2}{3}\right)^x$ ;  $b = \frac{2}{3}$ ;  $y = 9$ ; (0, 10), (-1, 10.5)
6.  $f(x) = \left(\frac{3}{10}\right)^x$ ;  $b = \frac{3}{10}$ ;  $y = 7$ ; (4, 5),  $\left(3, \frac{1}{3}\right)$

### Reteach 13-3

1.  $g(x) = -2e^{x+1} - 3$
2.  $g(x) = 3e^{x-9} + 4$
3.  $g(x) = 0.5e^{x-2} - 0.1$
4.  $g(x) = -e^{x+3} + 2$

### Reteach 13-4

1. About 18.8 years
2. About 11.6 years

### Reteach 14-1

1.  $y = 1.2 \cdot 1.3^x$
2.  $y = 56 \cdot 0.9^x$
3.  $y = -20 \cdot 1.1^x$
4.  $y = 3.0 \cdot 2.1^x$
5.  $y = 100 \cdot 0.8^x$
6.  $y = -5 \cdot 0.5^x$

### Reteach 14-2

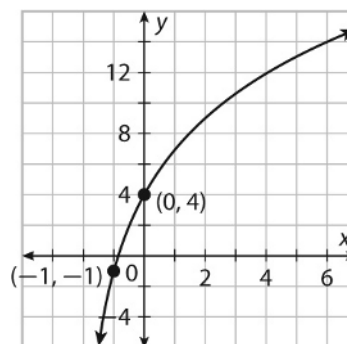
1.  $f(x) = 0.598 \cdot 2.402^x$
2.  $f(x) = 2.156x + 13.642$
3.  $f(x) = 0.526x^2 - 7.803x + 81.341$
4.  $f(x) = 203.67 \cdot 0.95^x$

### Reteach 15-1

1.  $\log_2 64 = 6$
2.  $\log_4 \frac{1}{16} = -2$
3.  $\log_{\frac{1}{3}} \frac{1}{27} = 3$
4.  $7^2 = 49$
5.  $2^{-4} = \frac{1}{16}$
6.  $8^x = 48$
7. 4
8.  $\frac{1}{3}$
9. -2

### Reteach 15-2

1.  $x = -2$ ; (-1, -1), (0, 4);



2.  $x = -5$ ; (-4, 2), (5, 1);

