

2. (0, 18) and (2, 2)

\downarrow
 a

x, y

$$y = a(b)^x$$

$$a \neq 0$$

$$b > 0$$

$$b \neq 1$$

$$(0, a)$$

$$\frac{2}{18} = \frac{18(b)^2}{18}$$

$$\sqrt{\frac{1}{9}} = \sqrt{b^2}$$

$$\frac{1}{3} = b$$

$$y = 18\left(\frac{1}{3}\right)^x$$

(1) (0, 3) (-1, 6)

\downarrow
 a

x, y

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

$$6 = 3(b)^{-1}$$

$$(b)b = \frac{3}{b}(b)$$

$$6b = 3$$

$$b = \frac{3}{6} = \frac{1}{2}$$

③ **POPULATION** In 2000, the population of Phoenix was 1,321,045, and it increased to 1,331,391 in 2004.

- a. Write an exponential function of the form $y = ab^x$ that could be used to model the population y of Phoenix. Write the function in terms of x , the number of years since 2000.

$$(0, 1,321,045) \quad (4, 1,331,391)$$

$$\frac{1,331,391}{1,321,045} = \frac{1,321,045(b)^4}{1,321,045}$$

$$\sqrt[4]{1.008} \approx \sqrt[4]{b^4}$$

$$1.002 \approx b$$

prediction equation

$$y = 1,321,045(1.002)^x$$

predict pop. in 2015
 \downarrow
 $x=15$

$$y = 1,321,045(1.002)^{15}$$

$$y =$$