

8. $(0, -0.4)$ and $(2, -10)$ $y = a(b)^x$

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 a

$$\frac{-10}{-0.4} = \frac{-0.4(b)^2}{-0.4}$$

$$\sqrt{25} = \sqrt{b^2}$$

$$5 = b$$

$y = -0.4(5)^x$

From the 1990 census, the population of Tea was 786. In the 2000 census, the population had grown to 1742.

$(0, 786)$ $(10, 1742)$ $x = \# \text{ yrs Since 1990}$

\downarrow
 a

x y

$$\frac{1742}{786} = \frac{786(b)^{10}}{786}$$

$10^{\text{th}} (1742/786)$

$$\sqrt[10]{\frac{1742}{786}} = \sqrt[10]{b^{10}}$$

$$1.083 \approx b$$

$$y = 786(1.083)^x$$

$$2007 \rightarrow x = 17$$

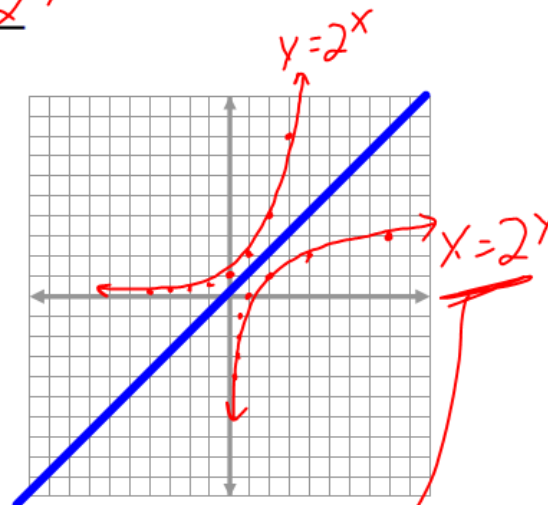
$$2010 \rightarrow x = 20$$

10. $(0,1)$ and $(-1,4)$

$$\begin{aligned} 4 &= (b)^{-1} \\ (b)4 &= \frac{1}{b}(b) \\ 4b &= 1 \\ b &= \frac{1}{4} \end{aligned} \rightarrow y = \left(\frac{1}{4}\right)^x$$

For the equation $y = 2^x$, the inverse would be $x = 2^y$

$y = 2^x$		$x = 2^y$	
x	y	x	y
-4	$\frac{1}{16}$	$\frac{1}{16}$	-4
-3	$\frac{1}{8}$	$\frac{1}{8}$	-3
-2	$\frac{1}{4}$	$\frac{1}{4}$	-2
-1	$\frac{1}{2}$	$\frac{1}{2}$	-1
0	1	1	0
1	2	2	1
2	4	4	2
3	8	8	3
4	16	16	4



To convert from exponential form to logarithmic form and vice versa:

Exponential form

$$X = b^y \rightarrow \text{exponent}$$

\downarrow
 base

Logarithmic form $\rightarrow \log$

$$\log_b X = y \rightarrow \text{exponent}$$

\downarrow
 base

log base b of X equals y