

$$1. \begin{matrix} x & y \\ (1, 10) & (2, 25) \end{matrix}$$

$$10 = a \cdot b^1 \quad 25 = a \cdot b^2$$

$$\frac{10}{b} = a$$

$$25 = \left(\frac{10}{b}\right) b^2$$

$$25 = 10 \cdot b$$
$$b = 2.5$$

$$10 = a(2.5)$$

$$a = 4$$

$$y = 4(2.5)^x$$

$$2. \begin{matrix} (2, 10\frac{2}{3}) & (-1, 4.5) & (2, 3\frac{2}{3}) & (-1, \frac{9}{2}) \end{matrix}$$

$$\frac{32}{3} = a \cdot b^2$$

$$\frac{9}{2} = a \cdot b^{-1} = \frac{a}{b}$$

$$a = \frac{9^3 \cdot 4^2}{2 \cdot 8} = 6$$

$$\frac{32}{3} = \frac{9b}{2} \cdot b^2$$

$$a = \frac{9b}{2}$$

$$y = 6\left(\frac{4}{3}\right)^x$$

$$\frac{2}{9} \cdot \frac{32}{3} = b^3 = \frac{64}{27}$$

$$b = \sqrt[3]{\frac{64}{27}} = \frac{4}{3}$$

$$3. \begin{matrix} (2, 6) & (4, 54) \end{matrix}$$

$$6 = a \cdot b^2$$

$$54 = a \cdot b^4$$

$$a = \frac{6}{3^2} = \frac{6}{9} = \frac{2}{3}$$

$$a = \frac{6}{b^2}$$

$$54 = \left(\frac{6}{b^2}\right) b^4$$

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

$$54 = 6b^2$$

$$9 = b^2$$

$$b = 3$$

$$4. \begin{matrix} (-2, .05) & (2, 12.8) \end{matrix}$$

$$.05 = a \cdot b^{-2}$$

$$12.8 = a \cdot b^2$$

$$a = .05(4)^2 = .8$$

$$.05 = \frac{a}{b^2}$$

$$12.8 = (.05b^2)b^2$$

$$12.8 = .05b^4$$

$$y = .8(4)^x$$

$$a = .05b^2$$

$$256 = b^4$$

$$b = 4$$

5.  $(2, 128)(-1, 16)$

$128 = a \cdot b^2$      $16 = a \cdot b^{-1} = \frac{a}{b}$

$128 = (16b)b^2$   
 $128 = 16b^3$   
 $8 = b^3$   
 $b = 2$

$y = 32(2)^x$

$a = 16b$   
 $a = 16(2)$   
 $a = 32$

6.  $(-1, 12.25)(1, 4)$

$12.25 = a \cdot b^{-1}$      $4 = a \cdot b^1$   
 $12.25 = \frac{a}{b}$   
 $a = 12.25b$

$a = 12.25 \left( \frac{4}{7} \right) = 7$

$4 = 12.25b \cdot b$   
 $b^2 = \frac{16}{49}$

$y = 7 \left( \frac{4}{7} \right)^x$

$b = \frac{4}{7} \approx .571$

7.  $y = 10^x$

8.  $y = 327(.05)^x$

9.  $y = 1.023(.98)^x$

10.  $y = .5(1.67)^x$

11.  $y = 9.2(2.3)^x$

12.  $y = 4.1(.72)^x$

13. decay. Initial Value (a) = 2  
 % decrease 10%

14. growth. a = 8  
 % ↑ 30%

15. growth a = 1  
 % ↑ 4%

16.  $y = 3^x$

17.  $y = 2(4)^x$   
 Parent:  $y = 4^x$   
 Vert. dil: bafo 2

| x  | y   |
|----|-----|
| 0  | 1   |
| 1  | 3   |
| -1 | 1/3 |

| x  | y                                   |
|----|-------------------------------------|
| 0  | $1 \cdot 2 = 2$                     |
| 1  | $4 \cdot 2 = 8$                     |
| -1 | $\frac{1}{4} \cdot 2 = \frac{1}{2}$ |





