

3.	<p>(1, 3): $3 = a \cdot b^1 \rightarrow a = \frac{3}{b}$</p> <p>(2, 12): $12 = a \cdot b^2$</p> $12 = \left(\frac{3}{b}\right) \cdot b^2$ $12 = 3b$ $4 = b$ $a = \frac{3}{4} = 0.75$ <p>So, an equation is $y = \frac{3}{4} \cdot 4^x$.</p>
5.	<p>(3, 1): $1 = a \cdot b^3 \rightarrow a = \frac{1}{b^3}$</p> <p>(5, 4): $4 = a \cdot b^5$</p> $4 = \left(\frac{1}{b^3}\right) \cdot b^5$ $4 = b^2$ $2 = b$ $a = \frac{1}{b^3} = \frac{1}{2^3} = \frac{1}{8}$ <p>So, an equation is $y = \frac{1}{8} \cdot 2^x$.</p>
7.	<p>(1, 2): $2 = a \cdot b^1 \rightarrow a = \frac{2}{b}$</p> <p>(3, 50): $50 = a \cdot b^3$</p> $50 = \left(\frac{2}{b}\right)b^3$ $50 = 2b^2$ $25 = b^2$ $5 = b$ $a = \frac{2}{b} = \frac{2}{5}$ <p>So, an equation is $y = \frac{2}{5} \cdot 5^x$.</p>

$$(-1, 10): 10 = a \cdot b^{-1} \rightarrow a = \frac{10}{b^{-1}}$$

$$(4, 0.31): 0.31 = a \cdot b^4$$

$$0.31 = \left(\frac{10}{b^{-1}}\right)b^4$$

$$0.31 = 10b^5$$

$$0.031 = b^5$$

$$\sqrt[5]{0.031} = b$$

$$0.5 \approx b$$

$$a = \frac{10}{b^{-1}} = \frac{10}{(\sqrt[5]{0.031})^{-1}} \approx 5$$

So an equation is $y = 5 \cdot \left(\frac{1}{2}\right)^x$.

9.

$$(4, 3): 3 = a \cdot 4^b \rightarrow a = \frac{3}{4^b}$$

$$(8, 15): 15 = a \cdot 8^b$$

$$15 = \left(\frac{3}{4^b}\right) \cdot 8^b$$

$$15 = 3 \cdot 2^b$$

$$5 = 2^b$$

15.

$$\log_2 5 = b$$

$$\frac{\log 5}{\log 2} = b$$

$$2.32 \approx b$$

$$a = \frac{3}{4^b} \approx \frac{3}{4^{2.32}} \approx 0.12$$

So, an equation is $y = 0.12x^{2.32}$.

17.

$$(2, 3): 3 = a \cdot 2^b \rightarrow a = \frac{3}{2^b}$$

$$(6, 12): 12 = a \cdot 6^b$$

$$12 = \left(\frac{3}{2^b}\right)6^b$$

$$12 = 3 \cdot 3^b$$

$$4 = 3^b$$

$$\log_3 4 = b$$

$$\frac{\log 4}{\log 3} = b$$

$$1.26 \approx b$$

$$a = \frac{3}{2^b} \approx \frac{3}{2^{1.26}} \approx 1.25$$

So, an equation is $y = 1.25 \cdot x^{1.26}$.

19.

$$(4, 8): 8 = a \cdot 4^b \rightarrow a = \frac{8}{4^b}$$

$$(8, 30): 30 = a \cdot 8^b$$

$$30 = \left(\frac{8}{4^b}\right) \cdot 8^b$$

$$30 = 8 \cdot 2^b$$

$$\frac{15}{4} = 2^b$$

$$\log_2 \frac{15}{4} = b$$

$$\frac{\log \frac{15}{4}}{\log 2} = b$$

$$1.91 \approx b$$

$$a = \frac{8}{4^b} \approx \frac{8}{4^{1.91}} \approx 0.57$$

So, an equation is $y = 0.57x^{1.91}$.

$$(4, 6.2): 6.2 = a \cdot 4^b \rightarrow a = \frac{6.2}{4^b}$$

$$(7, 23): 23 = a \cdot 7^b$$

$$23 = \left(\frac{6.2}{4^b}\right)7^b$$

$$23 = 6.2\left(\frac{7}{4}\right)^b$$

$$\frac{23}{6.2} = \left(\frac{7}{4}\right)^b$$

21. $\log_{7/4} \frac{23}{6.2} = b$

$$\frac{\log \frac{23}{6.2}}{\log \frac{7}{4}} = b$$

$$2.34 \approx b$$

$$a = \frac{6.2}{4^b} \approx \frac{6.2}{4^{2.34}} \approx 0.24$$

So, an equation is $y = 0.24x^{2.34}$.