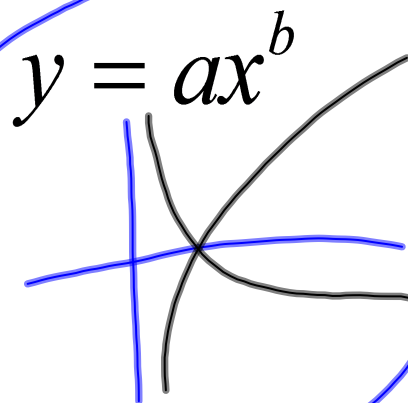
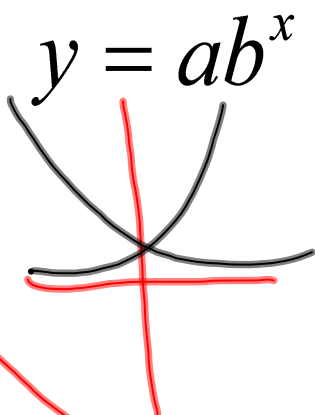


Chapter 7.7: Write and Apply Exponential and Power Functions

Writing equations given
certain information.



Write an exponential functions $y=ab^x$ whose graph passes through (1,12) and (3,108)

Calculator:

-Stat, edit

- $L_1 = x$ -values
 $L_2 = y$ -values

-Turn Stat Plot
On (2nd y=)

-Stat, calc
Exp reg

$$y = 4 \cdot 3^x$$

$$12 = ab^1 \rightarrow a = \frac{12}{b}$$

$$108 = ab^3$$

$$108 = \frac{12}{b} b^3$$

$$108 = 12 b^2$$

$$\frac{108}{12} = b^2$$

$$9 = b^2$$

$$b = 3$$

$$a = \frac{12}{3}$$

$$a = 4$$

$$y = 4 \cdot 3^x$$

A store sells motor scooters. The table shows the number y of scooters sold during the x th year the store has been open.

- graph $(x, \ln y)$. Is exponential a good fit?
- find the equation.

Year, x	0-10	1	2	3	4	5	6	7
Number of scooters sold, y	0-100	12	16	25	36	50	67	96

Use a Calculator too...

$$y = 8.46 \cdot 1.42^x$$

Write a power function $y = ax^b$ whose graph passes through $(3, 2)$ and $(6, 9)$

Calculator

$$L_1 = 3, 6$$

$$L_2 = 2, 9$$

Stat, Calc
pwr reg

$$y = .18x^{2.17}$$

$$\begin{aligned}
 2 &= a(3)^b \rightarrow a = \frac{2}{3^b} \\
 9 &= a(6)^b \\
 9 &= \frac{2}{3^b} (6)^b \\
 9 &= \frac{2 \cdot 2^b}{2} \\
 4.5 &= 2^b \\
 \log_2 4.5 &= b \\
 \frac{\log 4.5}{\log 2} &= b \\
 a &= \frac{2}{3^{2.17}} \\
 a &= .18
 \end{aligned}$$

use the calculator to find the power model for the data.

Bird	Wingspan (ft), x	Weight (lb), y
Cuckoo	1.90	0.23
Crow	2.92	1.04
Curlew	3.41	1.69
Goose	5.35	6.76
Vulture	8.40	16.03



Homework: Chapter 7.7 pg.533
#'s 4-8e,12-18e,22,26