

Drawing the Graphs of the Exponential Functions - PDF Copy

The presentation contains the slides below with the objective of showing how to: **Use positive integer values of x , to draw the graphs of: $y = k^x$**

Drawing the Graphs of Exponential Functions

Objectives:
Using positive integer values of x , draw the graphs of:

$$y = k^x$$

Grade B - A*


☆ 1 ☆

What are the values of
 $3^2 \rightarrow 3 \times 3 = 9$
 $2^3 \rightarrow 2 \times 2 \times 2 = 8$
 $1.5^4 \rightarrow 1.5 \times 1.5 \times 1.5 \times 1.5 = 5.0625$

The subscript tells us how many times to multiply the base number

There are buttons on scientific calculators to do this quickly


For example, 2.31..



☆ 2 ☆

Using your calculator find the values of these to 4 dp

$1.7^4 = 8.3521$
 $2.4^3 = 7.9626$
 $1.8^4 = 10.4976$
 $0.8^3 = 0.512$
 $0.2^4 = 0.0016$



☆ 3 ☆

We can form an equation where the x term is the index like this...

$$y = k^x$$

The k is a constant for the equation

$$y = 1.5^x$$

For example, if k was 1.1, we would obtain...

Equations in this form are called **exponential equations**

☆ 4 ☆

To draw the graph of $y = 1.5^x$

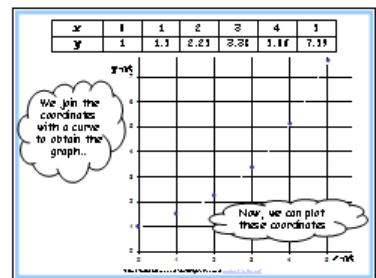
Use your calculator complete this table to find the y values to 2 dp...

x	0	1	2	3	4	5
1.5^x						
y						

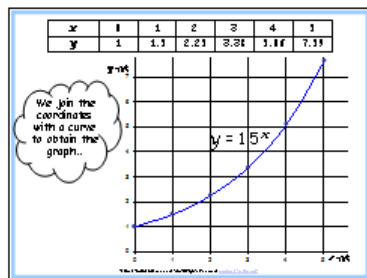
Notice that $1.5^0 = 1$ and any base to the power of 0 is 1

Now, we can plot these coordinates

☆ 5 ☆



☆ 6 ☆



☆ 7 ☆

Here is another example where the base is less than 1

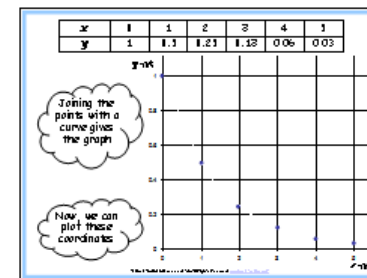
Draw the graph of $y = 0.5^x$

Use your calculator complete this table to find the y values to 2 dp...

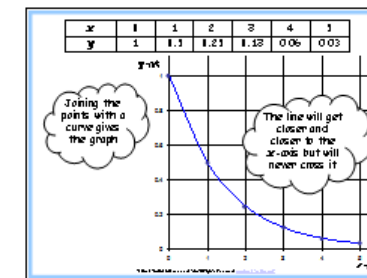
x	0	1	2	3	4	5
0.5^x						
y						

Now, we can plot these coordinates

☆ 8 ☆



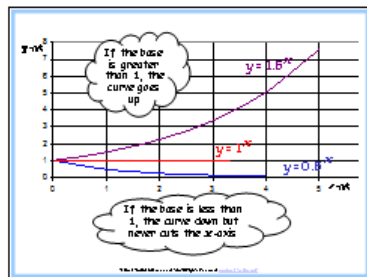
☆ 9 ☆



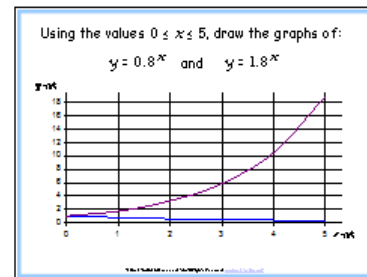
☆ 10 ☆

Comparing the two graphs $y = 1.5^x$ and $y = 0.5^x$

☆ 11 ☆



☆ 12 ☆



☆ 13 ☆