 Exponential functions

What do the graphs look like?

Use Desmos or other graphing software to graph the following and look at the shape of the graphs.



Definition

All the above graphs are exponential functions.

An exponential function is a function in the form and , where

By looking at the graphs drawn above, complete the statements about the shape of an exponential function.

If the function is in the form :

* The graph goes through the axis at 1
* As values get more negative, the values approach zero

As values get more positive, the values get really big

* As gets bigger, the graph becomes closer to the y-axis/steeper

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Using the information

Using the definition of the function, choose which of the following are exponential functions:

No

Yes

No

Yes

By looking at the shape of the graphs of the above functions, choose which of the following are exponential functions:



Yes



No

No



No

Yes



Yes

Match the equation with its graph:











Complete the following table of values and use the points to graph the exponential curve.

|  | -3 | -2 | -1 | 0 | 1 | 2 |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | 1 | 3 | 9 |

On the calculator:



Plot as (-3, 0.037)

On the calculator:



1. Plot each point.
2. Join the plotted points with a curved line.
	* Note – To make a smooth curve, place your wrist on the paper on the inside of the curve and use it as a pivot point when drawing.



Try graphing these:

|  | -2 | -1 | 0 | 1 | 2 |
| --- | --- | --- | --- | --- | --- |
|  | 0.25 | 0.5 | 1 | 2 | 4 |



|  | -2 | -1 | 0 | 1 | 2 |
| --- | --- | --- | --- | --- | --- |
|  | 9 | 3 | 1 |  |  |

