

Study Guide

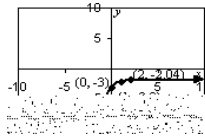
Exponential Functions
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Exponential Functions

An exponential function is an equation that has a variable in the exponent. The functions below are all

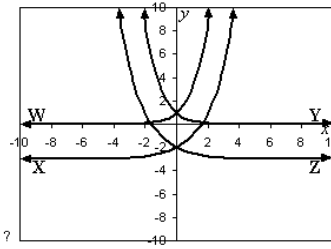
x	$y = -2 - 5^x$	(x, y)
-2	-27	$(-2, -27)$
-1	-7	$(-1, -7)$
0	-2	$(0, -2)$
1	-3	$(1, -3)$
2	-5	$(2, -5)$

Step 5: Plot the points on a coordinate plane to graph the exponential function.



Step 6: Compare this graph to the solution choices and choose the correct answer, which is choice D.

Answer: D.



Example 2: Which graph represents the exponential function $y = 3^x$?

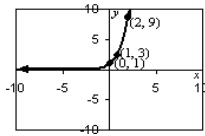
Step 1: Make a table of values and choose x -values to substitute into the equation.

x	$y = 3^x$	(x, y)
-2	$1/9 = 0.\bar{1}$	$(-2, 0.1)$
-1	$1/3 = 0.\bar{3}$	$(-1, 0.3)$
0	1	$(0, 1)$
1	3	$(1, 3)$
2	9	$(2, 9)$

Step 2: Substitute the values in the x column into the equation in the center column to determine the corresponding y -values. Write the coordinate points in the (x, y) column.

x	$y = 3^x$	(x, y)
-2	$1/9 = 0.\bar{1}$	$(-2, 0.1)$
-1	$1/3 = 0.\bar{3}$	$(-1, 0.3)$
0	1	$(0, 1)$
1	3	$(1, 3)$
2	9	$(2, 9)$

Step 3: Plot the points on a coordinate plane to graph the exponential function.



Step 4: Compare this graph to the curves in the question and choose the correct answer.

Answer: W

Comparing Graphs of Exponential Functions:

The standard form for an exponential function is shown below.

$$y = ab^x$$

For purposes of comparing graphs of exponential functions, two more variables need to be added, such that the standard form becomes the form shown below.

$$y = ab^{(x+d)} + c$$

The value of c determines whether the graph shifts upward or downward and the value of d determines whether the graph shifts right or left. See the table below.

