

Algebra 1
Graphing Exponential Functions

Graphing Exponential Functions | A1-U07-P14

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
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Topic focus
This topic is a focused set of 96 practice tasks on Graphing Exponential Functions.
8 PDFs and a README; 152 buyer pages.

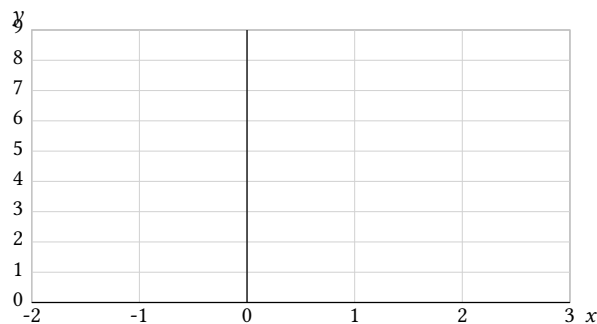
Algebra 1

Graphing Exponential Functions

Name: _____ Date: _____ Class: _____

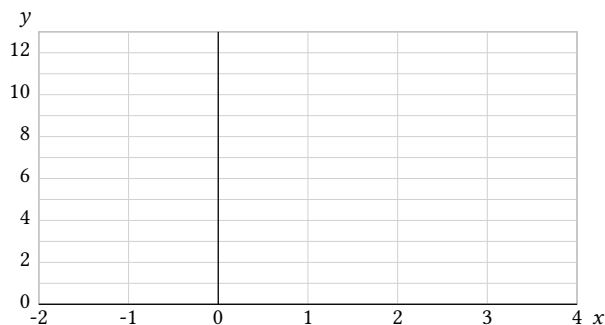
Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

On the stated grid, graph $f(x) = 2^x$. Label three exact points, the y -intercept, and the horizontal asymptote, then indicate the direction of growth. For matching, use the complete constructed graph with the original required anchors, boundary points, asymptote, scale and labels. The graphing work remains required; a formula-only response does not replace it.



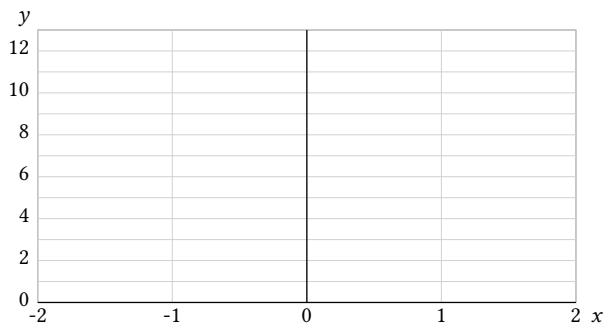
Bank label: _____

Construct the graph of $g(x) = 3(\frac{1}{2})^x$ in the given window. Supply three consecutive-input points and identify the line the curve approaches. For matching, use the complete constructed graph with the original required anchors, boundary points, asymptote, scale and labels. The graphing work remains required; a formula-only response does not replace it.



Bank label: _____

Plot $h(x) = 4(3)^x$ using the required inputs $-1, 0$, and 1 . State the intercept and asymptote that complete the sketch. For matching, use the complete constructed graph with the original required anchors, boundary points, asymptote, scale and labels. The graphing work remains required; a formula-only response does not replace it.



Bank label: _____

Graph $p(x) = -2(2)^x$ on the unit grid. Label its y -intercept, two neighboring points, and describe its rightward behavior. For matching, use the complete constructed graph with the original required anchors, boundary points, asymptote, scale and labels. The graphing work remains required; a formula-only response does not replace it.



Bank label: _____

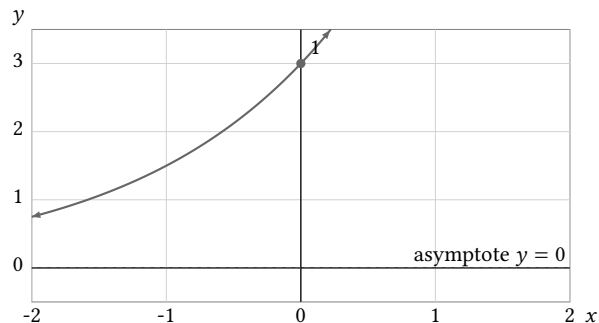
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Name: _____ Date: _____ Class: _____

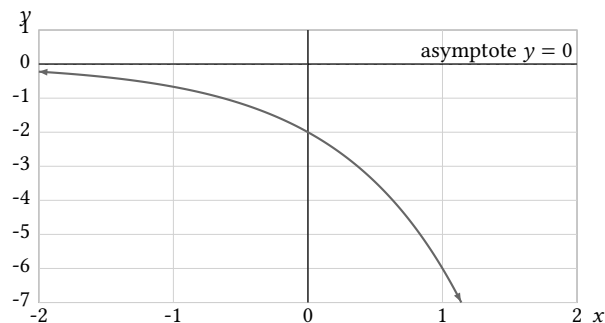
Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

A displayed continuous exponential curve is labeled $y = 3(2)^x$, passes through $(0, 3)$, and approaches $y = 0$ from above. State its domain, range, and y -intercept.

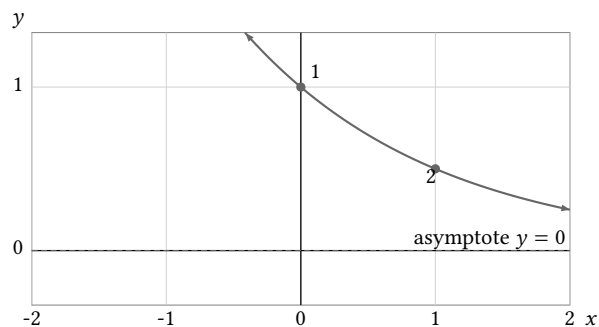


Marker	Exact coordinate	Boundary status
1	$(0, 3)$	included

The graph is the full curve $y = -2(3)^x$ with horizontal asymptote $y = 0$. Give its domain, range, and y -intercept.

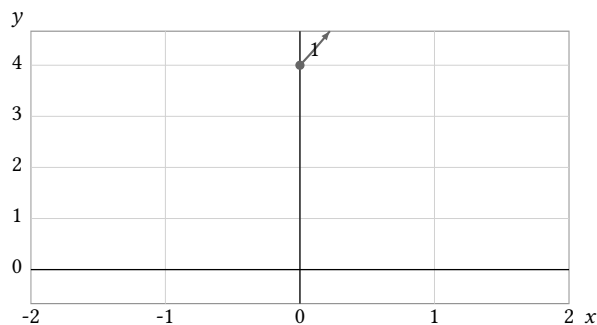


A continuous curve passes through $(0, 1)$ and $(1, \frac{1}{2})$, is labeled $y = (\frac{1}{2})^x$, and approaches $y = 0$. Name the y -intercept and tell whether it increases or decreases.



Marker	Exact coordinate	Boundary status
1	$(0, 1)$	included
2	$(1, \frac{1}{2})$	included

The displayed branch $y = 4(2)^x$ begins with a closed point at $(0, 4)$ and continues right. State the restricted domain and range.



Marker	Exact coordinate	Boundary status
1	$(0, 4)$	included

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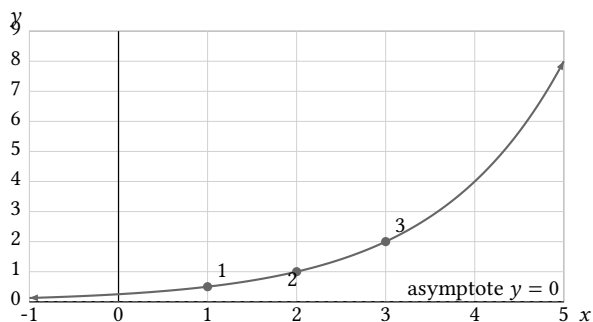
Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: The anchors become $(1, \frac{1}{2})$, $(2, 1)$, and $(3, 2)$; the graph is shifted 2 units right and retains asymptote $y = 0$.

Using the reference points for $y = 3^x$, graph $y = 3^{x+1}$. Where do the three points move? For matching, use the complete constructed graph with the original required anchors, boundary points, asymptote, scale and labels. The graphing work remains required; a formula-only response does not replace it. Graph for the incoming match

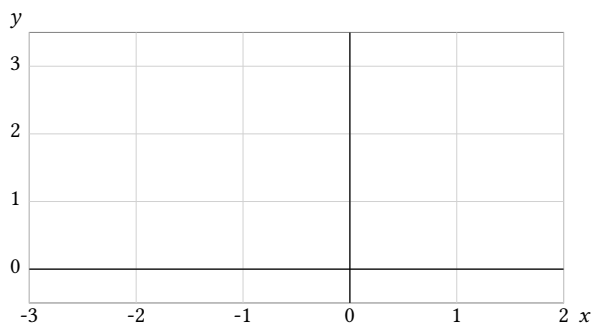
Window $x: [-1, 5]$, $y: [0, 9]$. Tick intervals: $x1, y1$.



Marker	Exact coordinate	Boundary status
1	$(1, \frac{1}{2})$	included
2	$(2, 1)$	included
3	$(3, 2)$	included

Graphing grid

Window $x: [-3, 2]$, $y: [-\frac{1}{2}, \frac{7}{2}]$. Tick intervals: $x1, y1$.



First value / input	Second value / output
-1	$\frac{1}{3}$
0	1
1	3

Your response: _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Which window shows all required anchors of $y = 3(2)^x$ at $x = 0, 1, 2$, and 3 ? Justify using the largest output.

A

Axis	Window interval
x	$[-1, 4]$
y	$[0, 30]$

B

Axis	Window interval
x	$[-1, 4]$
y	$[0, 10]$

Select a window that displays both the initial value and decay through $x = 6$ for $y = 64(\frac{1}{2})^x$.

A

Axis	Window interval
x	$[0, 6]$
y	$[0, 70]$

B

Axis	Window interval
x	$[0, 6]$
y	$[0, 5]$

Graphing Exponential Functions

Full Worked Solutions - excerpt

Worked example

Problem. The graphs $f(x) = 2^x$ and $g(x) = 3^x$ share $(0, 1)$. Which is higher for positive x , and which is higher for negative x ?

Answer. For $x > 0$, g is higher; for $x < 0$, f is higher. They are equal at $x = 0$.

Explanation and check.

The larger base grows faster to the right but has smaller reciprocal powers to the left.

Worked example

Problem. For the reflected growth graphs u and v , which curve lies lower? Describe the relationship between their outputs. Compare $U(x) = -2(2)^x$ and $V(x) = -6(2)^x$ with asymptote $y = 0$.

Answer. v lies lower for every real x , and $v(x) = 3u(x)$. Both decrease and approach $y = 0$ from below on the left.

Explanation and check.

Multiplying a negative output by 3 makes it more negative, so the larger coefficient magnitude places the curve lower.