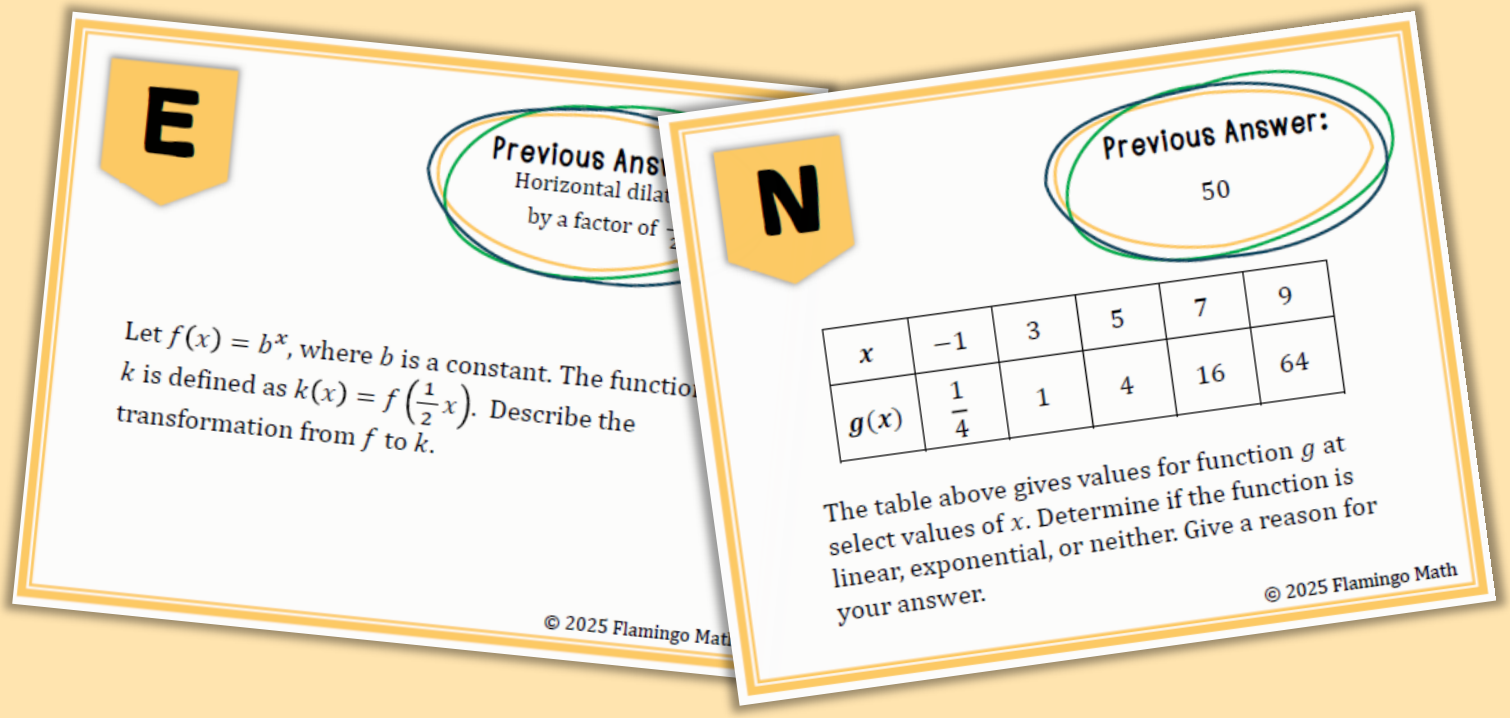
AP® Precalculus

Exponential & Logarithmic Functions



Scavenger Hunt

Flamingo MATH
Jean Adams

Exponential & Logarithmic Functions Scavenger Hunt

ABOUT THE RESOURCE:

This is an activity with 20 task cards designed for **Exponential and Logarithmic Functions Unit** in **AP Precalculus**. Each card requires an analytic, algebraic, or numeric approach. This can be used at the end of the unit.

Teaching Suggestions:

- Use the **task cards** as a group activity.
- Use the cards as a quick review. There is a student recording sheet included.
- Have students check their results with their group.

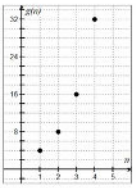
PREPARATION:

When printing cards, be sure to choose the print range to correspond to the sections of pages in portrait layout and then the sections of pages in landscape layout.

Please visit my store for more engaging task card activities.

A

Previous Answer: $[-4, 1]$



Values of the geometric sequence g_n are graphed in the figure. Write an expression for the nth term of the sequence.

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B

Previous Answer: Logarithmic, input change is proportional

The auditorium at Surfside High School has rows of seats arranged in a manner that the number of seats in each consecutive row form an arithmetic sequence. If the second row contains 1 the seventh row contains 29 seats, how will be in the fourteenth row?

C

Previous Answer: $\frac{2}{7}$

Write an expression equivalent to the expression where x and y are positive constants.

$$\ln\left[\frac{\sqrt{e^2}}{2y^4}\right]$$

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D

Previous Answ... Expo...

Given the function $k(x) = 5(7)^{2x}$ write a equivalent form of the expression that ca represent the function k.

E

Previous Answer: Horizontal dilation by a factor of $\frac{1}{2}$

Let $f(x) = b^x$, where b is a constant. The function k is defined as $k(x) = f\left(\frac{1}{2}x\right)$. Describe the transformation from f to k.

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F

Previous Answer: $\frac{7}{24}$

Given $k(x) = 3e^{2x} + e$. Solve $k(x) = 13e$ for values of x in the domain of k.

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G

Previous Answer: $5(7)^{\frac{x}{2}}$

The function $f(x) = (x-5)^2$, for domain ... Find the inverse function $f^{-1}(x)$ such ... domain of $f^{-1}(x) \geq 0$

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H

Previous Answer: Exponential, output change is proportional

The function f is given by $f(x) = -4\left(\frac{2}{5}\right)^x$. Describe the end behavior of f using limit notation.

$\lim_{x \to -\infty} f(x) =$ _____

$\lim_{x \to \infty} f(x) =$ _____

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J

Previous Answer: Decreasing at a decreasing rate

Let h be an exponential function defined by $h(x) = 4\left(\frac{\pi}{6}\right)^x$. Describe the behavior of the graph of h in terms of increasing/decreasing and the concavity.

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K

Previous Answer: $2(2)^x$

x	25	5	1	$\frac{1}{5}$	$\frac{1}{25}$
$h(x)$	1	2	3	4	5

The table above gives values for function h at select values of x. Determine if the function is exponential, logarithmic or neither. Give a reason for your answer.

L

Previous Answer: $\ln(2) + \frac{1}{2}$

Solve for x, check for extraneous solutions.

$$\log_3(x-1) + 2 = \log_3(2x+7)$$

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M

Previous Answ... 5(...

The graph of the exponential function k(... the input-output pairs $(0, 5)$ and $(2, 35)$, ... expression that could represent $k(x)$.

N

Previous Answer: 50

x	-1	3	5	7	9
$g(x)$	$\frac{1}{4}$	1	4	16	64

The table above gives values for function g at select values of x. Determine if the function is linear, exponential, or neither. Give a reason for your answer.

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P

Previous Answer: Decreasing and concave up

Let $f(x) = b^x$, where b is a constant. The function g is defined as $g(x) = [f(x)]^2$. Describe the transformation from f to g.

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Q

Previous Answer: $\frac{16}{7}$

$$\left(\frac{9}{25}\right)^{(2x-1)} = \left(\frac{125}{27}\right)^x$$

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R

Previous Answer: $5 - \sqrt{x}$

The function h is given by $h(x) = \frac{(e^x)^2}{e^{\frac{1}{2}}}$.

Solve $h(x) = e^{\frac{1}{4}}$ for values of x in the domain of h.

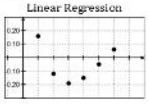
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S

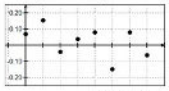
Previous Answer: Horizontal dilation by a factor of 2

The graphs of the residuals for the linear and exponential regression models are shown below. Use the graphs of the residuals to determine which model was appropriate for the data.

Linear Regression



Exponential Regression



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T

Previous Answer: $-\infty, 0$

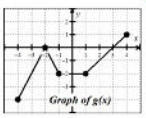
x	0	1	2	3
$g(x)$	$-\frac{1}{2}$	-2	-8	-32

The table above gives the values for function g at select values of x. Describe the behavior of the rate of change of the graph of g.

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U

Previous Answer: $\frac{17}{4}$



The graph of the piecewise function g is shown above and consists of four line-segments. The function h is the inverse of g, such that $h^{-1}(x) = g(x)$. What is the domain of h?

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V

Previous Answer: $\frac{3}{2} - \ln 2 - 4 \ln y$

x	-3	0	2	4	8
$g(x)$	6	3	-2	1	4

The table gives values of the function g for selected values of x. The function f is given by $f(x) = 2^x + x^2$. What is the value of $f(g(2))$?

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