Exponential Functions Quiz Answer Key PDF

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Which of the following equations can be solved using logarithms?

A. 2^x = 16

B. 3^x = 10 ✓

C. x^2 = 9

D. 5^x = 5^3

Which of the following are properties of exponential functions?

A. They have a constant rate of change.

B. They have a horizontal asymptote. ✓

C. They can model population growth. ✓

D. They are always increasing.

What is the general form of an exponential function?

A. f(x) = ax + b

B. f(x) = a · b^x ✓

C. f(x) = ax^2 + bx + c

D. f(x) = a/b^x

Which of the following functions represent exponential decay?

A. f(x) = 2 · (0.8)^x ✓

B. f(x) = 5 · (1.2)^x

C. f(x) = 3 · (0.5)^x ✓

D. f(x) = 4 · (2)^x

In the function f(x) = a · b^x, which statements are true?

A. a is the initial value. ✓
B. b must be greater than 1.
C. x is the exponent. ✓
D. The function is linear.

Describe the process of solving an exponential equation using logarithms.

A. Take the square root of both sides.
B. Take the logarithm of both sides. ✓
C. Multiply both sides by the base.
D. Add the same value to both sides.

In the exponential function f(x) = 5 · 2^x, what is the initial value?

A. 2
B. 5 ✓
C. 10
D. 0

What is the horizontal asymptote of the function f(x) = 2 · 3^x + 4?

A. y = 0
B. y = 2
C. y = 3
D. y = 4 ✓

How does the graph of an exponential function change when the base is less than 1?

A. It increases rapidly.
B. It decreases rapidly. ✓
C. It remains constant.
D. It oscillates between values.

What is the significance of the initial value in an exponential function, and how does it affect the graph?

A. It determines the slope of the graph.
B. It determines the y-intercept of the graph. ✓

C. It has no effect on the graph.
D. It affects the horizontal shift.

What is the value of f(0) for the function f(x) = 7 · 5^x?

A. 0
B. 5
C. 7 ✓
D. 35

What transformation occurs in the function f(x) = 3 · 2^{x-1}?

A. Vertical shift up by 1
B. Horizontal shift left by 1
C. Horizontal shift right by 1 ✓
D. Vertical shift down by 1

If f(x) = 4 · (0.75)^x, what type of function is it?

A. Linear
B. Quadratic
C. Exponential Growth
D. Exponential Decay ✓

Which of the following represents exponential growth?

A. f(x) = 3 · (0.5)^x
B. f(x) = 3 · (1.5)^x ✓
C. f(x) = 3x
D. f(x) = 3 - x

Discuss the relationship between exponential functions and their logarithmic counterparts.

A. They are unrelated concepts.
B. They are inverses of each other. ✓
C. They represent the same values.

D. They can be used interchangeably.

Explain how you can determine whether an exponential function represents growth or decay.

A. By analyzing the initial value.
B. By examining the base of the function. ✓
C. By looking at the y-intercept.
D. By checking the rate of change.

Which transformations apply to the function f(x) = -2 · 3^{x+2} - 1?

A. Reflection over the x-axis ✓
B. Horizontal shift left by 2 ✓
C. Vertical shift down by 1 ✓
D. Vertical stretch by a factor of 2

Provide a real-world example of exponential growth and explain how it can be modeled mathematically.

A. Investment growth over time.
B. Population growth. ✓
C. Temperature changes.
D. Distance traveled over time.

Which of the following is a characteristic of exponential decay?

A. The base is greater than 1.
B. The graph increases as x increases.
C. The base is between 0 and 1. ✓
D. The function has no asymptote.

What are the characteristics of the graph of f(x) = 5 · (1.5)^x?

A. It passes through the point (0, 5). ✓
B. It has a horizontal asymptote at y = 5.
C. It represents exponential growth. ✓

D. It decreases as x increases.