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Graphing Exponentials Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the standard form of an exponential function?

undefined. A) f(x) = mx + b

undefined. B) f(x) = a * b^x ✓

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

undefined. D) f(x) = 1/x

The standard form of an exponential function is given by f(x) = a * b^x.

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The standard form of an exponential function is given by f(x) = a * b^x.

Which of the following are characteristics of exponential growth?

undefined. A) The graph is a straight line.

undefined. B) The graph increases rapidly. ✓

undefined. C) The base b is greater than 1. ✓

undefined. D) The graph has a horizontal asymptote.

Exponential growth is characterized by rapid increase and a base greater than 1.

Which of the following are characteristics of exponential growth?

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Exponential growth is characterized by rapid increase and a base greater than 1.

Explain what happens to the graph of an exponential function when the base b is between 0 and 1.

When the base b is between 0 and 1, the graph decreases and approaches the x-axis.

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When the base b is between 0 and 1, the graph decreases and approaches the x-axis.

What is the y-intercept of the exponential function f(x) = 3 * 2^x?

undefined. A) 0

undefined. B) 1

undefined. C) 2

undefined. D) 3 ✓

The y-intercept is found by evaluating f(0), which equals 3.

What is the y-intercept of the exponential function f(x) = 3 * 2^x?

undefined. A) 0

undefined. B) 1

undefined. C) 2

undefined. D) 3 ✓

The y-intercept is the value of the function when x = 0.

Part 2: Understanding and Application

If an exponential function represents decay, which of the following must be true about the base b?

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undefined. A) b > 1

undefined. B) b = 1

undefined. C) 0 < b < 1 ✓

undefined. D) b < 0

For decay, the base b must be between 0 and 1.

If an exponential function represents decay, which of the following must be true about the base b?

undefined. A) b > 1

undefined. B) b = 1

undefined. C) 0 < b < 1 ✓

undefined. D) b < 0

For decay, the base b must be between 0 and 1.

Which of the following statements about exponential functions are true?

undefined. A) They can model population growth. ✓

undefined. B) They always pass through the origin.

undefined. C) They have a constant rate of change.

undefined. D) They can model radioactive decay. ✓

Exponential functions can model growth and decay in various scenarios.

Which of the following statements about exponential functions are true?

undefined. A) They can model population growth. ✓

undefined. B) They always pass through the origin.

undefined. C) They have a constant rate of change.

undefined. D) They can model radioactive decay. ✓

Exponential functions can model growth and decay, but they do not always pass through the origin.

Describe how the graph of f(x) = 2 * 3^x + 4 differs from the graph of f(x) = 2 * 3^x.

The graph of f(x) = 2 * 3^x + 4 is shifted vertically upwards by 4 units compared to f(x) = 2 * 3^x.

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The graph of f(x) = 2 * 3^x + 4 is shifted vertically upwards by 4 units compared to f(x) = 2 * 3^x.

Which of the following functions represents exponential decay?

undefined. A) f(x) = 5 * 1.5^x

undefined. B) f(x) = 3 * 0.8^x ✓

undefined. C) f(x) = 2 * 2^x

undefined. D) f(x) = 4 * x^2

The function f(x) = 3 * 0.8^x represents exponential decay.

Which of the following functions represents exponential decay?

undefined. A) f(x) = 5 * 1.5^x

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undefined. C) f(x) = 2 * 2^x

undefined. D) f(x) = 4 * x^2

Exponential decay is represented by functions with a base between 0 and 1.

A population of bacteria doubles every 3 hours. If the initial population is 100, write the exponential function that models this situation.

The exponential function is P(t) = 100 * 2^(1/3 * t), where t is in hours.

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The function is P(t) = 100 * 2^(1/3 * t), where t is in hours.

Part 3: Analysis, Evaluation, and Creation

Analyze the function f(x) = -3 * 2^x. Which of the following are true?

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undefined. **A) The graph is reflected over the x-axis. ✓**

undefined. **B) The graph represents exponential decay. ✓**

undefined. **C) The graph has a horizontal asymptote at y = 0. ✓**

undefined. D) The y-intercept is -3.

The graph is reflected over the x-axis and represents decay.

Analyze the function f(x) = -3 * 2^x. Which of the following are true?

undefined. **A) The graph is reflected over the x-axis. ✓**

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The function is reflected over the x-axis and represents decay.

Compare and contrast the graphs of f(x) = 2^x and g(x) = 2^{-x}.

f(x) = 2^x increases while g(x) = 2^{-x} decreases, showing opposite behaviors.

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The graph of f(x) = 2^x increases while g(x) = 2^{-x} decreases, showing opposite behaviors.

What is the effect of changing the base b from 2 to 0.5 in the function f(x) = 3 * b^x?

undefined. A) The graph becomes steeper.

undefined. **B) The graph changes from growth to decay. ✓**

undefined. C) The graph remains unchanged.

undefined. D) The graph shifts horizontally.

Changing the base from 2 to 0.5 changes the graph from growth to decay.

What is the effect of changing the base b from 2 to 0.5 in the function f(x) = 3 * b^x?

undefined. A) The graph becomes steeper.

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undefined. D) The graph shifts horizontally.

Changing the base from 2 to 0.5 changes the graph from growth to decay.

Evaluate the effectiveness of using exponential functions to model the spread of a virus. Discuss the assumptions and limitations of this model.

Exponential functions can model initial spread but may not account for saturation effects.

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Exponential functions can model initial spread but may not account for saturation effects.

Which scenario is best modeled by an exponential function?

undefined. A) A car traveling at a constant speed.

undefined. B) The temperature of a cooling object. ✓

undefined. C) The height of a thrown ball over time.

undefined. D) The distance traveled by a train.

The temperature of a cooling object is best modeled by an exponential function.

Which scenario is best modeled by an exponential function?

undefined. A) A car traveling at a constant speed.

undefined. B) The temperature of a cooling object. ✓

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undefined. D) The distance traveled by a train.

Exponential functions model scenarios with rapid change, such as population growth.

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