Introduction to Logarithmic Functions Assessment

Student Name: _____	**Class:** _____
Student ID: _____	**Date:** _____

Assessment Details

Duration: 2 hours	**Total Marks:** 100
Topics Covered:	• Introduction to Logarithmic Functions • Properties of Logarithmic Functions • Graphing Logarithmic Functions • Real-World Applications of Logarithmic Functions

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section A: Multiple Choice [20 marks]

Question 1 [2 marks]

What is the definition of a logarithmic function?

A) A function that is the inverse of an exponential function

B) A function that has a constant base and a variable exponent

C) A function that is used to model population growth

D) A function that is used to solve systems of equations

Question 2 [2 marks]

What is the purpose of graphing a logarithmic function?

A) To find the x-intercept

B) To find the y-intercept

C) To visualize the relationship between the input and output values

D) To solve a system of equations

Question 3 [2 marks]

What is a real-world application of logarithmic functions?

A) Modeling population growth

B) Solving systems of equations

C) Finding the x-intercept of a graph

D) Graphing a linear function

Section B: Short Answer Questions [40 marks]

Question 4 **[8 marks]**

Explain the concept of a logarithmic function and its relationship to exponential functions.

Question 5 **[8 marks]**

Describe a real-world application of logarithmic functions and how it is used to solve a problem.

Section C: Graphing Activity [20 marks]

Question 6 **[10 marks]**

Graph the following logarithmic functions:

y = log(x)

y = log2(x)

y = log(x) + 2

Section D: Problem-Solving Activity [20 marks]

Question 7 **[10 marks]**

Solve the following problems using logarithmic functions:

If a population grows from 100 to 1000 in 10 years, what is the average annual growth rate?

A company's profit grows exponentially with a base of 2 and an exponent of x. If the profit is $1000 after 5 years, what is the value of x?

Section E: Real-World Application Project [20 marks]

Question 8 **[20 marks]**

Choose a real-world application of logarithmic functions and create a project that demonstrates your understanding of the concept.

Some examples include:

• Modeling population growth

• Analyzing the pH levels of a solution

• Determining the intensity of a sound wave