

Western Governors University (WGU) MATH1200 C957 Applied Algebra Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What characterizes a decreasing logistic function in a graph?**
 - A. Concave up followed by concave down**
 - B. Concave down followed by concave up**
 - C. Linear growth**
 - D. S-shaped curve**
- 2. What is the best fit equation for a set of real-world data called?**
 - A. Linear equation**
 - B. Regression equation**
 - C. Exponential function**
 - D. Quadratic function**
- 3. What does Moore's Law primarily discuss?**
 - A. The cost of technology**
 - B. The growth rate of technology**
 - C. Doubling the number of transistors on a circuit**
 - D. The lifespan of electronic devices**
- 4. In functions, what is a characteristic of a logistic function?**
 - A. It has a linear increase.**
 - B. It creates a J-shaped curve.**
 - C. It has both upper and lower asymptotes.**
 - D. It is always decreasing.**
- 5. What is the maximum number of turns a degree 3 polynomial can handle?**
 - A. 1 turn**
 - B. 2 turns**
 - C. 3 turns**
 - D. No turns**

6. How is a degree 0 polynomial described?

- A. As a non-variable constant**
- B. As a linear function**
- C. As an equation of degree 1**
- D. As a polynomial with one term**

7. What type of function is characterized by having a constant rate of change?

- A. Polynomial function**
- B. Linear function**
- C. Exponential function**
- D. Logistic function**

8. What does the term 'input' refer to in a function?

- A. Dependent variable**
- B. Independent variable**
- C. Function notation**
- D. Constant value**

9. What is the 'origin' in a Cartesian coordinate system?

- A. A fixed point from which coordinates are measured**
- B. The point where $x = y = 0$**
- C. The point of intersection of two lines**
- D. A point in the first quadrant**

10. What is the process of making predictions about unknown data points based on an existing model called?

- A. Validity**
- B. Model choice**
- C. Extrapolations**
- D. Sample size**

Answers

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1. A
2. B
3. C
4. C
5. C
6. A
7. B
8. B
9. A
10. C

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Explanations

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1. What characterizes a decreasing logistic function in a graph?

- A. Concave up followed by concave down**
- B. Concave down followed by concave up**
- C. Linear growth**
- D. S-shaped curve**

A decreasing logistic function is characterized by its S-shaped curve behavior, which reflects how the growth rate of a population changes over time. In this context, the graph typically starts with an initial phase of rapid growth when the population is small, transitions into a slowdown as it approaches a maximum capacity or carrying capacity, and eventually levels off. This behavior indicates that the function exhibits both concavity up and down phases. In the case of a decreasing logistic function, the characteristic concave down followed by concave up illustrates how the rate of change diminishes as the input values approach the carrying capacity. It demonstrates that initially, as the population size increases, growth is rapid (concave up), but as resources become limited or the environment reaches its carrying capacity, the growth slows down, leading to the concave down portion of the function. So, the selection that describes this behavior accurately captures the transition from rapid to slow growth, indicative of a logistic function's properties. The other options do not accurately define a decreasing logistic function: linear growth represents constant change rather than the variable change seen in logistic behavior, and concave up followed by concave down would more accurately describe an increasing logistic function rather than a decreasing one.

2. What is the best fit equation for a set of real-world data called?

- A. Linear equation**
- B. Regression equation**
- C. Exponential function**
- D. Quadratic function**

The best fit equation for a set of real-world data is known as a regression equation. This is a statistical tool used to model the relationship between a dependent variable and one or more independent variables. When using regression analysis, data points collected from observations are analyzed to determine a mathematical relationship, aiming to minimize the difference between the observed values and those predicted by the model. Regression equations can take various forms, such as linear, quadratic, or exponential, depending on the nature of the relationship in the data. The primary goal of regression is to find the equation that best represents the data trend, allowing for predictions and insights into the underlying patterns. This is why "regression equation" is the most precise answer to describe the mathematical model that fits observed data in a statistical context.

3. What does Moore's Law primarily discuss?

- A. The cost of technology
- B. The growth rate of technology
- C. Doubling the number of transistors on a circuit**
- D. The lifespan of electronic devices

Moore's Law primarily addresses the observation that the number of transistors that can be placed inexpensively on an integrated circuit doubles approximately every two years. This exponential increase in transistor density tends to result in greater computational power and efficiency while also contributing to a reduction in relative cost per transistor. As the technological capability improves, it impacts various aspects of technology, including performance and miniaturization of electronic devices. This principle has significant implications for the growth and progression of technology, influencing everything from computer processors to smartphones and beyond. The doubling of transistors allows for advancements in speed and functionality, which is why option C accurately captures the essence of Moore's Law.

4. In functions, what is a characteristic of a logistic function?

- A. It has a linear increase.
- B. It creates a J-shaped curve.
- C. It has both upper and lower asymptotes.**
- D. It is always decreasing.

A logistic function is characterized by its S-shaped curve, commonly arising in growth models where a quantity increases rapidly, then slows down as it approaches a maximum limit. One key feature of a logistic function is the presence of both upper and lower asymptotes. The lower asymptote typically represents a starting value that the function approaches as time approaches negative infinity, while the upper asymptote represents the maximum limiting value that the function approaches as it grows. As the function starts off near the lower asymptote, it rises quickly until it approaches but never actually reaches the upper asymptote, resulting in the characteristic S-shape. This behavior contrasts with purely linear functions, which exhibit a constant rate of change, and functions that only increase or decrease consistently. In contrast, options describing linear increases or consistent decreasing trends do not apply to logistic functions, as their growth is initially exponential and tends to taper off. Moreover, the function does not create a J-shaped curve; this shape is typical of exponential functions. Therefore, acknowledging the asymptotic behavior is crucial to understanding the nature of logistic functions.

5. What is the maximum number of turns a degree 3 polynomial can handle?

- A. 1 turn
- B. 2 turns
- C. 3 turns**
- D. No turns

A degree 3 polynomial, which is also known as a cubic polynomial, can be represented in the general form $f(x) = ax^3 + bx^2 + cx + d$, where a , b , c , and d are constants and $a \neq 0$. The key to understanding the number of turns a polynomial can make lies in its derivative. The derivative of a cubic polynomial is a quadratic polynomial (degree 2), which can be expressed as $f'(x) = 3ax^2 + 2bx + c$. A quadratic polynomial can have at most two real roots, indicating that the original cubic polynomial can change direction (or "turn") a maximum of two times. The polynomial can increase, then decrease, and then increase again, or some combination thereof, but it cannot turn more than two times. This behavior reflects the degree of the polynomial: the maximum number of turns correlates to one less than the degree of the polynomial. Thus, for a degree 3 polynomial, this allows for a maximum of 2 turns, not exceeding that number due to the nature of its derivative. Consequently, the correct answer to the question regarding

6. How is a degree 0 polynomial described?

- A. As a non-variable constant**
- B. As a linear function
- C. As an equation of degree 1
- D. As a polynomial with one turn

A degree 0 polynomial is characterized as a non-variable constant. This means that the polynomial does not contain any variable terms; it's simply a constant value, such as 5 or -3. In terms of polynomial classification, a degree is determined by the highest exponent of the variable. Since a degree 0 polynomial has no variable component, it can be thought of as being constant for all values of its input, thereby demonstrating that it remains unchanged regardless of the variable's value. On the other hand, the other descriptions do not accurately represent a degree 0 polynomial. A linear function typically refers to a degree 1 polynomial where the highest exponent of the variable is one. An equation of degree 1 also denotes a linear relationship but includes variable terms. A polynomial with one turn implicates at least degree 2, suggesting the presence of a quadratic term which is not applicable to a degree 0 polynomial since that would lack any variable component entirely. Thus, the correct characterization is indeed that it is a non-variable constant.

7. What type of function is characterized by having a constant rate of change?

- A. Polynomial function**
- B. Linear function**
- C. Exponential function**
- D. Logistic function**

A function that exhibits a constant rate of change is defined as a linear function. This means that for any equal increments in the input variable (usually represented as $\langle x \rangle$), there are equal increments in the output variable (represented as $\langle y \rangle$). Linear functions can be described by the equation $\langle y = mx + b \rangle$, where $\langle m \rangle$ represents the slope of the line, indicating the constant rate of change. This property distinguishes linear functions from other types of functions. For example, polynomial functions can have varying rates of change depending on their degree, exponential functions increase or decrease at a rate proportional to their current value, which results in accelerating growth or decay, and logistic functions show growth that starts exponentially but levels off over time as it approaches a carrying capacity. Therefore, the characteristic of having a constant rate of change firmly identifies linear functions as the correct answer.

8. What does the term 'input' refer to in a function?

- A. Dependent variable**
- B. Independent variable**
- C. Function notation**
- D. Constant value**

In the context of a function, the term 'input' refers specifically to the independent variable. This is the value that you provide to the function to determine the output. The independent variable is typically represented by symbols such as $\langle x \rangle$ in the function notation $\langle f(x) \rangle$, where $\langle f \rangle$ is the function and $\langle x \rangle$ is the input value. When you input a specific value for the independent variable, the function processes that input according to its defined rule or equation to produce an output, often referred to as the dependent variable. Therefore, the independent variable is critical because it sets the stage for all subsequent calculations and outcomes within the function. Understanding that the input is related to the independent variable is fundamental in analyzing functions, as it allows you to manipulate and understand how changes in input lead to changes in output.

9. What is the 'origin' in a Cartesian coordinate system?

- A. A fixed point from which coordinates are measured**
- B. The point where $x = y = 0$**
- C. The point of intersection of two lines**
- D. A point in the first quadrant**

The 'origin' in a Cartesian coordinate system is indeed a fixed point from which all coordinates are measured, and this context is crucial for understanding its role in the system. The origin serves as the reference point where the x-axis and y-axis intersect, which is specifically at the coordinates $(0, 0)$. This means that both the x-coordinate and y-coordinate of the origin are zero. While the statement that the origin is the point where $x = y = 0$ is true, implying that this specific point is indeed the origin, it doesn't capture the broader concept of the origin as a fixed reference point in the coordinate system. Additionally, it is the intersection of the two axes that defines the location of the origin, but defining it solely as an intersection may suggest locations at other intersections in different contexts. Lastly, describing the origin as a point in the first quadrant is inaccurate, as the origin is situated at the boundary point between quadrants, not confined to one. Thus, the most encompassing and accurate definition is that the origin is a fixed point that serves as the reference from which all Cartesian coordinates are derived.

10. What is the process of making predictions about unknown data points based on an existing model called?

- A. Validity**
- B. Model choice**
- C. Extrapolations**
- D. Sample size**

The process of making predictions about unknown data points based on an existing model is referred to as extrapolation. This involves using established relationships or patterns within the data to make informed estimates about values that lie outside the range of the data used to create the model. Extrapolation extends the model's applicability beyond the known data, enabling analysts to predict outcomes or trends that have not yet been observed. This is particularly useful in various fields such as economics, environmental science, and engineering, where future predictions can influence decision-making. In contrast, the other terms refer to different concepts. Validity pertains to the accuracy and reliability of the model itself, model choice involves selecting which model will be used for analysis, and sample size refers to the number of observations or data points collected in a study, none of which specifically address the act of predicting unknown data points based on an existing model.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://wgu-math1200-c957.examzify.com>

We wish you the very best on your exam journey. You've got this!

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