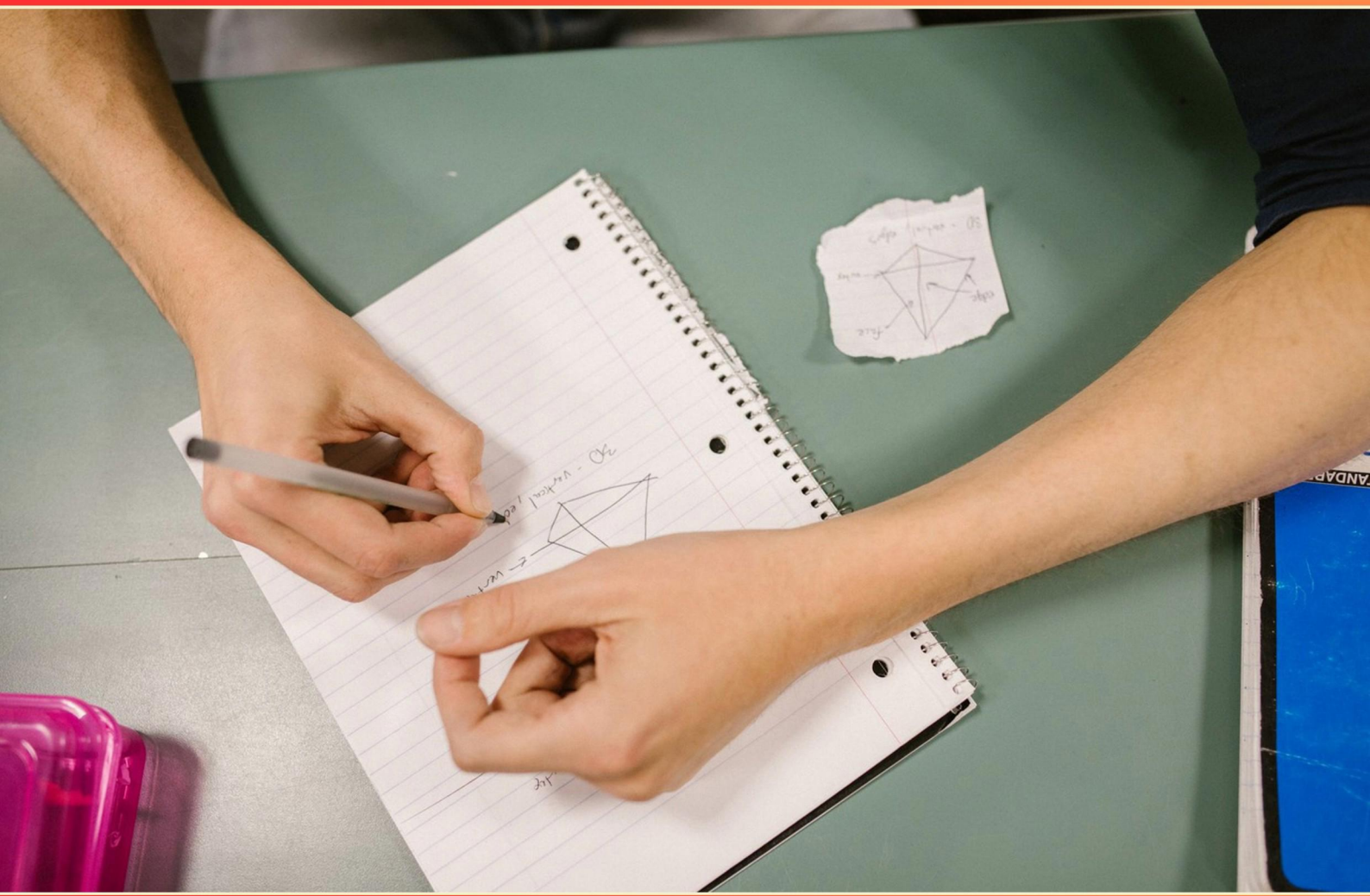
ACADEMIC TEAM – MATH PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://academicteammath.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

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 15

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. What is the solution set for the equation sqrt(3x + 7) = x?

A. x = 3

B. x = (3 + sqrt(37))/2

C. x = (3 - sqrt(37))/2

D. x = 5

2. The maximum likelihood estimator (MLE) is used in statistics. What does it aim to estimate?

A. The parameters of a probability distribution

B. The mean of a dataset

C. The variance of a dataset

D. The standard deviation of a population

3. What is the range of the inverse of the function f(x) = (x + 2)/(x - 2)?

A. All real numbers

B. All real numbers except y = 2

C. y ≤ 2

D. y ≥ 0

4. What is the difference in terms of pi between the circumference of a circle that circumscribes a square of side length 10 and the circumference of a circle inscribed in the same square?

A. 10πsqrt(2)

B. 10πsqrt(2) - 10π

C. 10π + 10πsqrt(2)

D. 20π

5. As a complex number, what is the product of (i^3 - i^2)(3i^4 + i)?

A. 2 + 4i

B. 4 - 2i

C. -4 + 2i

D. -2 - 4i

SAMPLE

6. What is the remainder when $2x^4 + 19x^3 - 8x^2 - 11x + 4$ is divided by $x - 2$?

A. 128

B. 134

C. 140

D. 144

7. What is the limit of $f(x) = x - 4$ as x approaches 3?

A. 1

B. -1

C. 0

D. 3

8. In which quadrant is the point (5, -3) located?

A. I

B. II

C. III

D. IV

9. When simplifying the expression $(x^2 + 2x + 1)$, what does it factor to?

A. $(x + 1)(x + 1)$

B. $(x - 1)(x - 1)$

C. $(x + 2)(x - 2)$

D. $(x + 1)(x - 1)$

10. In an oblique triangle ABC with two sides measuring 17 units and 27 units, and an included angle of 68°, what is the area to the nearest square unit?

A. 200

B. 213

C. 230

D. 250

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What is the solution set for the equation sqrt(3x + 7) = x?

A. x = 3

B. x = (3 + sqrt(37))/2

C. x = (3 - sqrt(37))/2

D. x = 5

To solve the equation \(\sqrt{3x + 7} = x \), we start by squaring both sides to eliminate the square root. This gives us: \[3x + 7 = x^2 \] Next, we rearrange the equation to set it to zero: \[x^2 - 3x - 7 = 0 \] Now, we can apply the quadratic formula, which is defined as \(x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \), where \(a = 1 \), \(b = -3 \), and \(c = -7 \). Calculating the discriminant: \[b^2 - 4ac = (-3)^2 - 4(1)(-7) = 9 + 28 = 37 \] Now we can plug this back into the quadratic formula: \[x = \frac{-(-3) \pm \sqrt{37}}{2 \cdot 1} = \frac{3 \pm \sqrt{37}}{2} \] This results in two potential solutions: \[x = \frac{

2. The maximum likelihood estimator (MLE) is used in statistics. What does it aim to estimate?

A. The parameters of a probability distribution

B. The mean of a dataset

C. The variance of a dataset

D. The standard deviation of a population

The maximum likelihood estimator (MLE) is a method in statistics used to estimate the parameters of a probability distribution. It operates under the principle of finding the parameter values that maximize the likelihood function, which represents how likely a particular set of observations is, given a statistical model. By focusing on the parameters of the distribution, MLE provides a way to infer the underlying structure that generated the data. For example, if you have a set of observations from a normal distribution, MLE would help you determine the best estimates for the mean and variance of that distribution by maximizing the likelihood of observing the collected data under different parameter settings. This makes it particularly powerful for various types of distributions and is commonly used across different statistical applications. In contrast, while the other options pertain to specific characteristics of datasets or populations, they do not encompass the broader scope of MLE's capability to address parameter estimation comprehensively. Thus, the focus on the general estimation of distribution parameters distinguishes the correct answer from the others.

3. What is the range of the inverse of the function f(x) = (x + 2)/(x - 2)?

A. All real numbers

B. All real numbers except y = 2

C. y ≤ 2

D. y ≥ 0

To determine the range of the inverse of the function f(x) = (x + 2)/(x - 2), we first need to examine the behavior of the original function. The function is defined for all real numbers except for x = 2, where it becomes undefined due to division by zero. To find the range of f(x), we can express f(x) in terms of y and solve for x. Rearranging gives us: y = (x + 2)/(x - 2) Multiplying both sides by (x - 2) leads to: y(x - 2) = x + 2 This can be rearranged to: yx - 2y = x + 2 Now, grouping the x terms: yx - x = 2y + 2 Factoring out x yields: x(y - 1) = 2y + 2 From this, we can solve for x: x = (2y + 2)/(y - 1) The expression shows that x is undefined when y = 1, meaning that f(x) cannot take the value y = 1. Thus, the range of f(x) consists of all real numbers

SAMPLE

4. What is the difference in terms of pi between the circumference of a circle that circumscribes a square of side length 10 and the circumference of a circle inscribed in the same square?

A. 10πsqrt(2)

B. 10πsqrt(2) - 10π

C. 10π + 10πsqrt(2)

D. 20π

*To determine the difference in terms of pi between the circumference of a circle that circumscribes a square and the circumference of a circle inscribed in the same square, we first need to calculate both circumferences. 1. **Circumference of the Circumscribed Circle**: The circumradius (radius of the circumscribed circle) for a square can be calculated based on the diagonal of the square. The diagonal \(d\) of a square with side length \(s\) is given by the formula \(d = s\sqrt{2}\). For a square with a side length of 10, the diagonal is: \[d = 10\sqrt{2} \] The radius \(R\) of the circumscribed circle is half of the diagonal: \[R = \frac{d}{2} = \frac{10\sqrt{2}}{2} = 5\sqrt{2} \] Thus, the circumference \(C_{circumscribed}\) of the circumscribed circle is: \[C_{circumscribed} = 2\pi R = 2\pi(5\sqrt{2})*

5. As a complex number, what is the product of (i^3 - i^2)(3i^4 + i)?

A. 2 + 4i

B. 4 - 2i

C. -4 + 2i

D. -2 - 4i

*To find the product of the expression (i^3 - i^2)(3i^4 + i), we first need to simplify each part. Starting with i^3 and i^2, we know the powers of the imaginary unit i follow a pattern: - i^1 = i - i^2 = -1 - i^3 = -i - i^4 = 1 Using this, we can simplify i^3 - i^2: - i^3 = -i - i^2 = -1 Thus: i^3 - i^2 = -i - (-1) = -i + 1 = 1 - i. Next, we simplify 3i^4 + i: - i^4 = 1 (as established), so: 3i^4 = 3 * 1 = 3. Therefore: 3i^4 + i = 3 + i. Now we can multiply the two expressions we simplified: (1 - i)(3 + i). Using the distributive property (also known as the FOIL method for binomials), we calculate: 1 * 3 = 3, 1 * i = i,*

6. What is the remainder when 2x^4 + 19x^3 - 8x^2 - 11x + 4 is divided by x - 2?

A. 128

B. 134

C. 140

D. 144

To find the remainder when dividing the polynomial \(2x^4 + 19x^3 - 8x^2 - 11x + 4\) by \(x - 2\), you can apply the Remainder Theorem. The theorem states that the remainder of a polynomial \(f(x)\) when divided by \(x - c\) is given by \(f(c)\). In this case, \(c = 2\). First, substitute \(x = 2\) into the polynomial: \[f(2) = 2(2^4) + 19(2^3) - 8(2^2) - 11(2) + 4 \] Calculating each term: - \(2^4 = 16\) and \(2 \times 16 = 32\) - \(2^3 = 8\) and \(19 \times 8 = 152\) - \(2^2 = 4\) and \(-8 \times 4 = -32\) - \(-11 \times 2 = -22\) Now, add these values together: \[f(2) =

SAMPLE

7. What is the limit of f(x) = x - 4 as x approaches 3?

A. 1

B. -1

C. 0

D. 3

To find the limit of the function $f(x) = x - 4$ as x approaches 3, we can evaluate the function by directly substituting 3 into it. When we substitute $x = 3$ into the function, we get: $$f(3) = 3 - 4 = -1$$ Therefore, as x approaches 3, the value of $f(x)$ approaches -1. This means the limit of the function as x approaches 3 is -1. The correct answer reflects this evaluation, confirming that the limit is indeed -1 when substituting the value of x.

8. In which quadrant is the point (5, -3) located?

A. I

B. II

C. III

D. IV

To determine the quadrant in which the point (5, -3) is located, it's essential to understand how the Cartesian coordinate system is divided. The coordinate system is divided into four quadrants: - Quadrant I contains points where both x and y coordinates are positive. - Quadrant II contains points where the x coordinate is negative and the y coordinate is positive. - Quadrant III contains points where both x and y coordinates are negative. - Quadrant IV contains points where the x coordinate is positive and the y coordinate is negative. In the case of the point (5, -3), the x-coordinate is 5, which is positive, and the y-coordinate is -3, which is negative. This matches the criteria for Quadrant IV, where the x values are positive and the y values are negative. Thus, (5, -3) is indeed found in Quadrant IV.

9. When simplifying the expression $x^2 + 2x + 1$, what does it factor to?

A. (x + 1)(x + 1)

B. (x - 1)(x - 1)

C. (x + 2)(x - 2)

D. (x + 1)(x - 1)

To simplify the expression $x^2 + 2x + 1$, we can look for a way to express it as the product of two binomials. The structure of the expression shows that we have a quadratic in standard form, where the coefficients correspond to a specific relationship. Notably, the expression can be recognized as a perfect square trinomial. The general form of a perfect square trinomial is $(a+b)^2 = a^2 + 2ab + b^2$. In this case, we can see that: - a is x (since x^2 is the square of x)), - b is 1 (since $1^2 = 1$)). Applying the perfect square formula, we find: $$x^2 + 2 \cdot x \cdot 1 + 1^2 = (x + 1)^2.$$ Thus, the expression $x^2 + 2x + 1$ factors to $(x + 1)(x + 1)$, or $(x + 1)^2$, confirming the choice

SAMPLE

10. In an oblique triangle ABC with two sides measuring 17 units and 27 units, and an included angle of 68°, what is the area to the nearest square unit?

A. 200

B. 213

C. 230

D. 250

To find the area of triangle ABC, where you know two sides and the included angle, you can use the formula for the area of a triangle given by: $$\text{Area} = \frac{1}{2} \times a \times b \times \sin(C)$$ In this case, the two sides of the triangle are $a = 17$ units and $b = 27$ units, and the included angle $C = 68^\circ$. Now, applying the values into the formula: 1. Calculate $\sin(68^\circ)$. Using a calculator, you find that $\sin(68^\circ) \approx 0.92718$. 2. Substitute the values into the area formula: $$\text{Area} = \frac{1}{2} \times 17 \times 27 \times \sin(68^\circ) \\ \text{Area} \approx \frac{1}{2} \times 17 \times 27 \times 0.92718$$ 3. Calculate $\frac{1}{2} \times 17 \times 27 = \frac{459$

SAMPLE

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://academicteammath.examzify.com

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

SAMPLE