Praxis Mathematics (5165) Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. What is the product of 12.3 and 2.56?

A. 31.488

B. 3.1488

C. 314.88

D. 1.2488

2. Completing the square is a method used to:

A. Convert a quadratic equation in standard form into perfect square form.

B. Solve a linear equation by isolating x.

C. Factor a cubic equation into a product of binomials.

D. Compute the discriminant of a quadratic.

3. An inequality that is true for all real numbers is called an absolute inequality.

A. Absolute Inequalities

B. Conditional Inequalities

C. Double Inequalities

D. Compound Inequalities

4. Which term is NOT listed as a synonym for the equals sign?

A. equal

B. is

C. becomes

D. equals

5. Which statement characterizes the tangent function?

A. It has a period of 180 degrees or π radians and has an asymptote every kπ/2

B. It has a period of 360 degrees

C. It is always negative

D. It has no asymptotes

6. Which of the following is a linear expression?

A. 4x + 2y - 7

B. x^2 + 3

C. xy + 1

D. 3/x + 2

7. Which of the following is a real number that is not rational?

A. sqrt(2)

B. 1/3

C. 0.25

D. -5

8. Which of the following is a polynomial?

A. 2x + 3

B. 2/x

C. log(x)

D. sqrt(x)

9. Which statement correctly describes an integer?

A. A number that can be negative.

B. A decimal with a fractional part.

C. A number that can be expressed as a ratio of two integers.

D. A non-integer.

10. If a linear function is defined for all real numbers, what is its domain?

A. All real numbers.

B. Only nonnegative numbers.

C. All positive numbers.

D. A finite interval.

Answers

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

Explanations

1. What is the product of 12.3 and 2.56?

A. 31.488

B. 3.1488

C. 314.88

D. 1.2488

When multiplying decimals, you can multiply as whole numbers and then place the decimal point so that the total number of decimal places in the product equals the sum of decimal places in the factors. Here, 12.3 has one decimal place and 2.56 has two, for a total of three decimal places. Remove the decimals: 12.3 becomes 123 and 2.56 becomes 256. Multiply: 123 × 256 = 31488. Now put the decimal point three places from the right: 31.488. So the product is 31.488. The other options come from miscounting or misplacing the decimal point after multiplication.

2. Completing the square is a method used to:

A. Convert a quadratic equation in standard form into perfect square form.

B. Solve a linear equation by isolating x.

C. Factor a cubic equation into a product of binomials.

D. Compute the discriminant of a quadratic.

Completing the square is used to turn a quadratic in standard form into a perfect-square form. By rewriting ax^2 + bx + c as a(x + b/2a)^2 + (c - b^2/4a), you express the quadratic as a square of a binomial plus a constant. This reveals the parabola's vertex and sets up the equation in a way that lets you solve by taking square roots when the expression is set to zero. It also naturally leads to the vertex form y = a(x − h)^2 + k, which is very helpful for graphing and understanding the graph's shape. This method isn't about linear equations, cubic factoring, or merely computing the discriminant; it's specifically about rewriting the quadratic as a perfect square.

3. An inequality that is true for all real numbers is called an absolute inequality.

A. Absolute Inequalities

B. Conditional Inequalities

C. Double Inequalities

D. Compound Inequalities

Think about statements whose truth doesn't depend on which real number you plug in. Absolute value is always nonnegative, so an inequality that holds for every real number often comes from that property. For example, |x| >= 0 is true for all x, illustrating a universal truth built from the absolute value. The other terms describe inequalities that only hold under certain conditions (conditional), or that pin a number between two bounds (double), or that combine two conditions (compound), none of which is guaranteed to be true for every real number. So the best label for a statement true for all real numbers is absolute inequalities.

4. Which term is NOT listed as a synonym for the equals sign?

A. equal

B. is

C. becomes

D. equals

Reading the equals sign is about expressing that two sides have the same value. In everyday math language, we often say that one side "is" the other, or that it is "equal to" the other side. In some contexts, especially when showing steps, we might use "becomes" to indicate a transformation to another expression. Among the options, you can use phrases that substitute for the symbol as "is" or "is equal to," and you can also hear or see "becomes" in a derivation. The word that isn't typically treated as a substitute for the equals sign in these readings is the way the symbol is named itself. "Equals" is the verb form tied to naming the operation, not a direct substitute used to read the symbol in the same instructional sense. That's why it's the one not listed as a synonym for the equals sign.

5. Which statement characterizes the tangent function?

A. It has a period of 180 degrees or π radians and has an asymptote every kπ/2

B. It has a period of 360 degrees

C. It is always negative

D. It has no asymptotes

Tangent repeats every 180 degrees and has vertical asymptotes where cosine is zero. Since tan x = sin x / cos x, the period comes from tan(x + π) = tan x, so the period is π radians (180 degrees). The function is undefined at x = π/2 + kπ, which are 90°, 270°, 450°, etc.—points where cosine is zero. Those asymptotes are 180 degrees apart, aligning with the idea of a 180-degree period and regularly spaced vertical asymptotes. This is why the described statement captures the essence of the tangent function. It isn't correct to say the period is 360 degrees, it isn't always negative, and there are indeed asymptotes.

6. Which of the following is a linear expression?

A. 4x + 2y - 7

B. x^2 + 3

C. xy + 1

D. 3/x + 2

Linear expressions are sums of constants and first powers of the variables, with no products of variables or variable in denominators. They have the form a x + b y + c, where a, b, c are constants. The expression 4x + 2y - 7 fits this form: each variable appears to the first power, there are no cross-terms like xy, and -7 is a constant. The other options fail because x^2 + 3 has x squared, xy + 1 has a product of two variables, and 3/x + 2 involves a reciprocal of x, which is not linear.

7. Which of the following is a real number that is not rational?

A. sqrt(2)

B. 1/3

C. 0.25

D. -5

Real numbers can be rational or irrational. A rational number can be written as a fraction p/q with integers p and q (q ≠ 0). An irrational number cannot be written that way. The square root of 2 is irrational because you cannot express it as a fraction of integers; a standard contradiction shows this: if sqrt(2) = p/q in lowest terms, then p^2 = 2 q^2, which implies p is even, so p = 2k, leading to q^2 = 2k^2 and thus q is even, contradicting that p/q was in lowest terms. The other numbers can be written as fractions of integers: 1/3 is already a ratio of integers, 0.25 equals 1/4, and -5 equals -5/1. Therefore, the real number that is not rational is sqrt(2).

8. Which of the following is a polynomial?

A. 2x + 3

B. 2/x

C. log(x)

D. sqrt(x)

A polynomial is an expression built from a finite sum of terms with nonnegative integer powers of the variable, each term having a real coefficient. In 2x + 3, the variable x appears as x^1 and x^0, with coefficients 2 and 3. Both exponents are nonnegative integers, so this expression fits the definition of a polynomial. The other options fail because 2/x can be seen as 2x^{-1} (negative exponent), log(x) involves a logarithm and is not a polynomial, and sqrt(x) is x^{1/2} (a fractional exponent), also not a polynomial.

9. Which statement correctly describes an integer?

A. A number that can be negative.

B. A decimal with a fractional part.

C. A number that can be expressed as a ratio of two integers.

D. A non-integer.

Integers are whole numbers that can be positive, negative, or zero, and they have no fractional part. Because integers include negative values, the statement that a number can be negative captures a true aspect of integers. It doesn't claim anything about being exclusively negative or about having a fractional part, which keeps it a correct and useful description. The other descriptions either describe numbers with fractional parts (not integers), describe a broader class (rationals) that includes many non-integers, or describe non-integers altogether. So the idea that integers can be negative aligns with a key property of integers and is the best match among the options.

10. If a linear function is defined for all real numbers, what is its domain?

A. All real numbers.

B. Only nonnegative numbers.

C. All positive numbers.

D. A finite interval.

Domain refers to the set of input values x for which the function is defined. For a linear function with real coefficients, there are no restrictions on x, so you can substitute any real number and get a real output. That means the domain is all real numbers. Visually, a straight line stretches without end in both directions, reflecting inputs from every real number. The other options would require limiting the inputs (to nonnegative, positive, or a finite interval), which isn't the case here.

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://praxis5165.examzify.com

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