

Limits Quiz PDF

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Which functions are continuous everywhere? (Select all that apply)

- Polynomial functions
- Rational functions
- Exponential functions
- Trigonometric functions

Describe a real-world scenario where limits are used to model continuous change.

Which of the following statements about limits at infinity are true? (Select all that apply)

- Limits at infinity can describe horizontal asymptotes.
- Limits at infinity always equal zero.
- Limits at infinity can be finite or infinite.
- Limits at infinity are only applicable to polynomial functions.

What is the limit of $f(x) = 5x - 3$ as x approaches 1?

- 2
- 5
- 8
- 10

What is the significance of a horizontal asymptote in the context of limits at infinity?

Provide an example of a function with an infinite limit and explain the behavior of the function as it approaches the point of discontinuity.

Discuss the differences between a removable discontinuity and a jump discontinuity.

How can the graphical behavior of a function help in understanding its limits? Provide an example.

Explain the concept of a limit using the epsilon-delta definition.

Which of the following is a removable discontinuity?

- Jump discontinuity
- Infinite discontinuity
- Hole in the graph
- Oscillating discontinuity

What is the limit of $\frac{\sin x}{x}$ as x approaches 0?

- 0
- 1
- ∞
- Undefined

What is the limit of a constant function $f(x) = 7$ as x approaches any value a ?

- 0
- 7
- a
- Does not exist

Which of the following are indeterminate forms that can be resolved using L'Hôpital's Rule? (Select all that apply)

- $\frac{0}{0}$
- $\frac{\infty}{\infty}$
- $\frac{1}{0}$
- $0 \times \infty$

Which limit law allows you to separate the limit of a sum into the sum of limits?

- Product Law
- Quotient Law

- Sum Law
- Power Law

Which of the following are true for a function to be continuous at a point $x = a$? (Select all that apply)

- $f(a)$ is defined.
- $\lim_{x \rightarrow a} f(x)$ exists.
- $\lim_{x \rightarrow a} f(x) = f(a)$.
- $f(x)$ must be differentiable at $x = a$.

What is the limit of $\frac{x^2 - 1}{x - 1}$ as x approaches 1?

- 0
- 1
- 2
- Does not exist

Which of the following functions has a horizontal asymptote at $y = 0$?

- $f(x) = \frac{1}{x}$
- $f(x) = x^2$
- $f(x) = x + 1$
- $f(x) = \sqrt{x}$

Which of the following are true about the Squeeze Theorem? (Select all that apply)

- It can be used to find limits of functions that are difficult to evaluate directly.
- It requires two bounding functions.
- It is applicable only to polynomial functions.
- It can be used to prove the limit of $\frac{\sin x}{x}$ as $x \rightarrow 0$.

Which of the following limits do not exist? (Select all that apply)

- $\lim_{x \rightarrow 0} \frac{1}{x}$
- $\lim_{x \rightarrow \infty} \frac{1}{x}$
- $\lim_{x \rightarrow 0} \sin \frac{1}{x}$
- $\lim_{x \rightarrow 0} x^2$

Which of the following represents a finite limit?

- $\lim_{x \rightarrow \infty} \frac{1}{x}$
- $\lim_{x \rightarrow 0} \frac{1}{x}$
- $\lim_{x \rightarrow 2} \frac{1}{x-2}$
- $\lim_{x \rightarrow 0} \sin x$