

Precalculus - Introduction to Limits - Test

Common Core F-IF.B.6, F-IF.C.7d · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 20-point test covers average rate of change, limits from tables and graphs, algebraic limits, limits at infinity and continuity (F-IF.B.6, F-IF.C.7d). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Introduction to Limits
- Standards: F-IF.B.6, F-IF.C.7d
- Time: 45 minutes
- Total: 20 points

Question 1 - Average rate of change [2 pts]

Find the average rate of change of $f(x) = x^2 - 3x$ from $x = 1$ to $x = 4$.

Question 2 - Limit from a table [2 pts]

x	0.9	0.99	1.01	1.1
f(x)	1.9	1.99	2.01	2.1

Values of $(x^2 - 1)/(x - 1)$.

The table shows $f(x) = \frac{x^2 - 1}{x - 1}$ near $x = 1$. Estimate $\lim_{x \rightarrow 1} f(x)$ and explain why $f(1)$ is undefined.

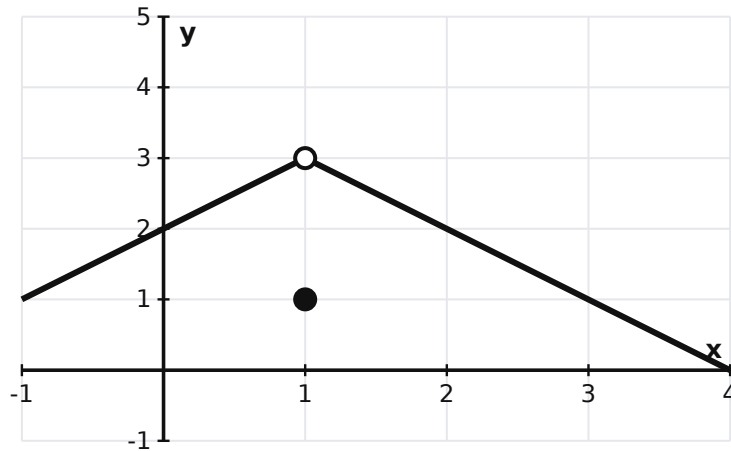
Question 3 - Factor and cancel [2 pts]

Evaluate $\lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5}$.

Question 4 - Rationalize [2 pts]

Evaluate $\lim_{x \rightarrow 9} \frac{\sqrt{x}-3}{x-9}$.

Question 5 - Read a graph [3 pts]



A function with a hole at $x = 1$.

Use the graph. (a) Find $\lim_{x \rightarrow 1^-} f(x)$ and $\lim_{x \rightarrow 1^+} f(x)$. (b) Does $\lim_{x \rightarrow 1} f(x)$ exist? What is $f(1)$? (c) Is f continuous at 1?

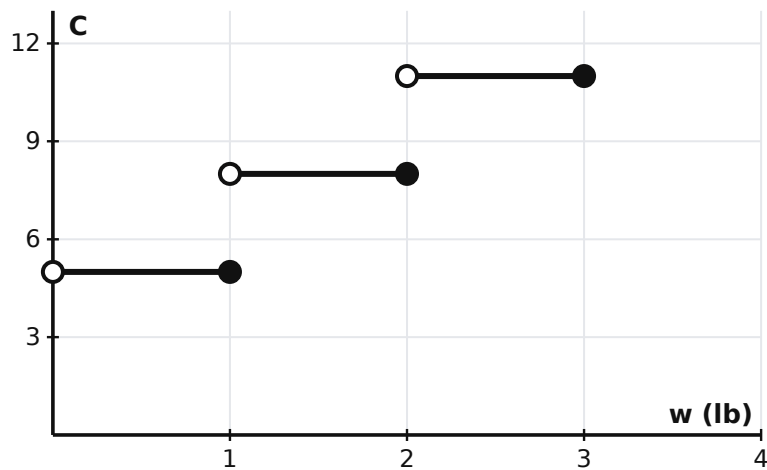
Question 6 - Limits at infinity [2 pts]

Evaluate (a) $\lim_{x \rightarrow \infty} \frac{6x^2+x}{2x^2-3}$; (b) $\lim_{x \rightarrow \infty} \frac{5x}{x^2+1}$.

Question 7 - Infinite limits [2 pts]

Find $\lim_{x \rightarrow 3^+} \frac{1}{x-3}$ and $\lim_{x \rightarrow 3^-} \frac{1}{x-3}$.

Question 8 - Step function [3 pts]



Delivery fees by weight.

A delivery fee is \$5 for $0 < w \leq 1$ lb, \$8 for $1 < w \leq 2$ lb and \$11 for $2 < w \leq 3$ lb. (a) Find $\lim_{w \rightarrow 2^-} C(w)$. (b) Find $\lim_{w \rightarrow 2^+} C(w)$. (c) Does $\lim_{w \rightarrow 2} C(w)$ exist? Explain.

Question 9 - Continuity [2 pts]

Find k so that $f(x) = x + 1$ for $x < 2$ and $f(x) = kx - 3$ for $x \geq 2$ is continuous at 2.