

AP Calculus AB - Evaluating Limits Algebraically - Test

Common Core AP CALC AB 1.5, AP CALC AB 1.6, AP CALC AB 1.7, AP CALC AB 1.8 · maths-pdf.fr/en/

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

This test checks evaluating limits with substitution, factoring, conjugates, special trig limits and the Squeeze Theorem (AP Calculus AB, 1.5, 1.6, 1.7, 1.8). It has 8 questions worth 20 points in total. Allow 45 minutes, work without notes, and show all work, since justification earns points on the AP exam.

About this test

- Grade: AP Calculus AB
- Chapter: Evaluating Limits Algebraically
- Standards: AP CALC AB 1.5, AP CALC AB 1.6, AP CALC AB 1.7, AP CALC AB 1.8
- Time: 45 minutes
- Total: 20 points

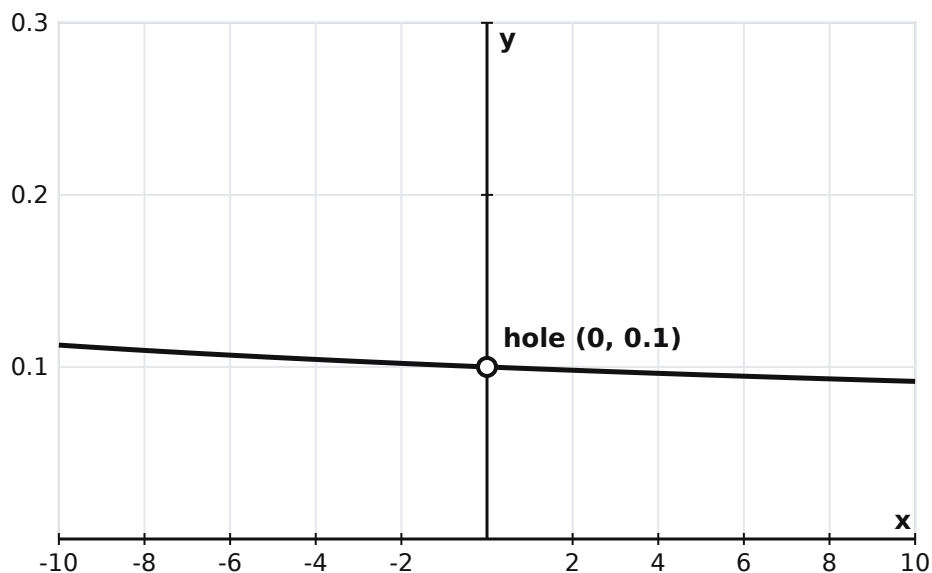
Question 1 - Substitution and limit laws [2 pts]

(a) Find $\lim_{x \rightarrow -1} (x^3 - 4x + 2)$. (1 point) (b) If $\lim_{x \rightarrow 2} f(x) = 6$ and $\lim_{x \rightarrow 2} g(x) = 3$, find $\lim_{x \rightarrow 2} [f(x)/g(x) + 2g(x)]$. (1 point)

Question 2 - Factoring [2 pts]

Find $\lim_{x \rightarrow 5} \frac{x^2 - 3x - 10}{x - 5}$.

Question 3 - Rationalizing [3 pts]



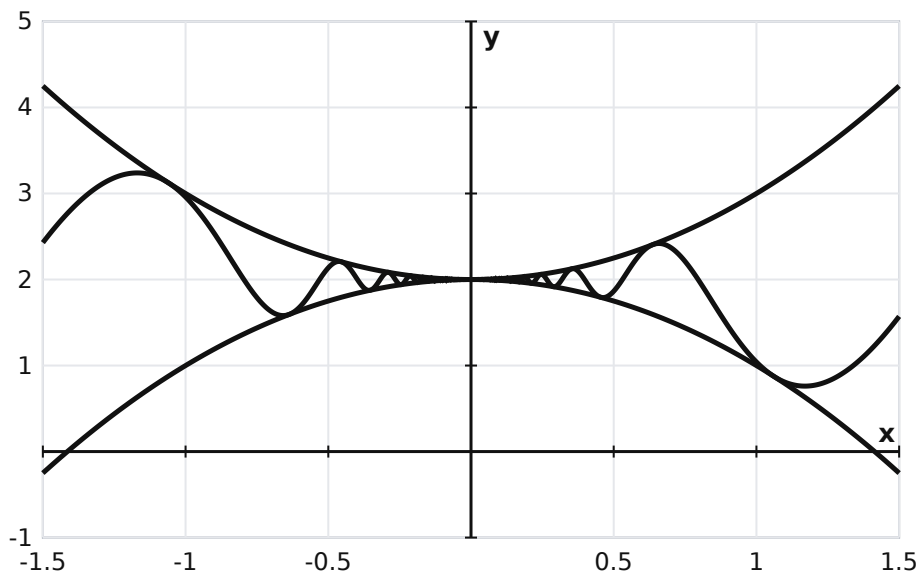
The graph of $(\sqrt{x+25}-5)/x$.

Find $\lim_{x \rightarrow 0} \frac{\sqrt{x+25}-5}{x}$.

Question 4 - Trigonometric limit [2 pts]

Find $\lim_{x \rightarrow 0} \frac{\sin 6x}{2x}$.

Question 5 - Squeeze Theorem [3 pts]



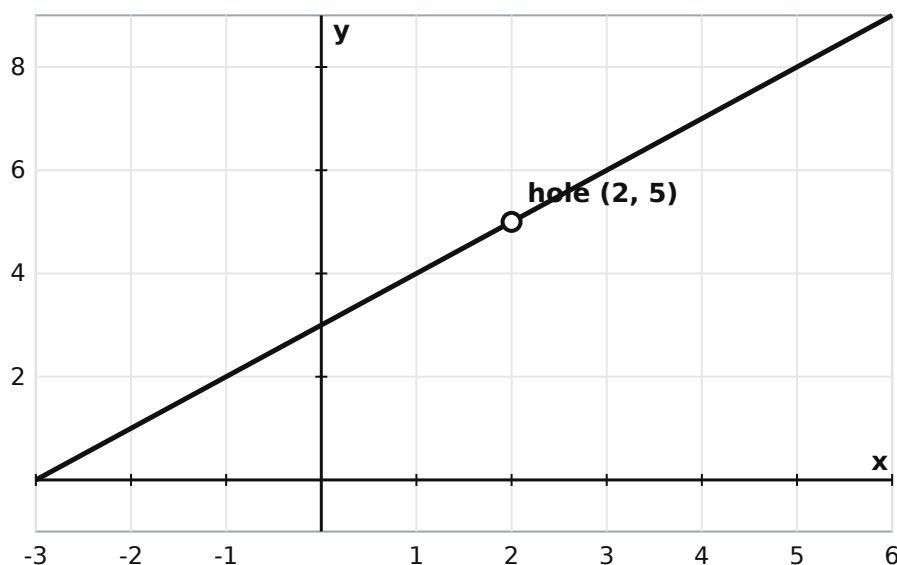
A function between $2 - x^2$ and $2 + x^2$.

The graph shows a function h with $2-x^2 \leq h(x) \leq 2+x^2$ for all x . Find $\lim_{x \rightarrow 0} h(x)$ and name the theorem that justifies it. (3 points)

Question 6 - Difference quotient limit [2 pts]

For $f(x) = 2x^2 + x$, find $\lim_{h \rightarrow 0} \frac{f(1+h) - f(1)}{h}$.

Question 7 - Hole in a graph [3 pts]



The graph of $g(x) = (x^2 + x - 6)/(x - 2)$.

Let $g(x) = \frac{x^2 + x - 6}{x - 2}$ with the graph shown. (a) Is $g(2)$ defined? (1 point) (b) Find $\lim_{x \rightarrow 2} g(x)$ algebraically. (1 point) (c) Explain how the graph shows your answer. (1 point)

Question 8 - Cost per item [3 pts]

A school store models the average cost per hoodie in dollars as $C(n) = \frac{n^2 - 100}{n - 10}$ for an order of n hoodies. (a) Find $C(12)$. (1 point) (b) Find $\lim_{n \rightarrow 10} C(n)$. (2 points)