

math worksheet

Generated Worksheet

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Answer the following questions carefully.

Here are five math questions about limits at a hard difficulty level for grade 12 students:

1. Let $f(x) = \frac{x^3 - 2x^2 - x + 1}{x - 1}$. Find the limit as $x \rightarrow 1$.
2. Given that $g(x) = \sqrt{x + 4}$, use numerical and graphical methods to find the value of $\lim_{x \rightarrow 3} g(x)$.
3. Prove that $\lim_{x \rightarrow 2} (3x^2 - x - 2) = 5$ by showing it's equal to a known limit.
4. Find the limit as $x \rightarrow 0$ of $\frac{\sin(x)}{x}$ using the definition of limits and properties of trigonometric functions.
5. Evaluate $\lim_{n \rightarrow \infty} \left(1 + \frac{2}{n}\right)^n$ by using a clever algebraic manipulation or applying a relevant mathematical concept.