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. Determine whether the limit as x approaches 2 of $\frac{x^2-4}{x-2}$ exists, and if so, find its value.
2. Prove that the function $f(x) = \left|x^3 + 3x^2 - 6x\right|$ has a limit as x approaches 0, and find its value.
3. Evaluate the limit as x approaches 1 of $(x-1)^2\left(2 + \frac{5}{x-1}\right)$.
4. Find the numerical value of the limit as x approaches -3 of $\frac{\sqrt{x^2+9}-3}{x+3}$.
5. Determine whether the function $f(x) = \sin\left(\frac{x-\pi}{2}\right)$ has a limit as x approaches π, and if so, find its value.