

Trial questions

Question 1: Given $f(x) = x^2$ and $g(x) = x^2 - 1$, illustrate **all** the properties of limits as x approaches 2.

Question 2: Using properties of limits, evaluate: $\lim_{x \rightarrow 1} \left(\frac{4(x^2 + 1)}{x^3 + 2} \right)$

Question 3: Given that $\lim_{x \rightarrow 2} g(x) = 4$ and $\lim_{x \rightarrow 2} f(x) = 5$

Compute:

1. $\lim_{x \rightarrow 2} 4f(x)g(x)$

2. $\lim_{x \rightarrow 2} [f(x) + g(x)]$

3. $\lim_{x \rightarrow 2} \left[\frac{f(x)}{3 + g(x)} \right]$

Question 4: With an example, explain the term removable discontinuity.

Question 5: Determine the values of constants **a** and **b** so that the function $f(x)$ is

continuous at $x=2$.

$$f(x) = \begin{cases} b - ax^2 & : x < 2 \\ 3 & : x = 2 \\ a + bx & : x \geq 2 \end{cases}$$