

Question 6

Evaluate the limit:

$$\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1}$$

Question 6 - Solution

We are asked to evaluate:

$$\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1}$$

Step 1: Factor the numerator

Recall that $x^2 - 1 = (x - 1)(x + 1)$. So,

$$\frac{x^2 - 1}{x - 1} = \frac{(x - 1)(x + 1)}{x - 1}$$

For $x \neq 1$, we can cancel $x - 1$ from numerator and denominator:

$$= x + 1$$

Step 2: Take the limit

Now that the expression simplifies to $x + 1$, we compute:

$$\lim_{x \rightarrow 1} (x + 1) = 2$$

Answer: 2