

Question 6

Evaluate the limit:

$$\lim_{x \rightarrow -2^+} \frac{4}{(x+2)^3}$$

Question 6 - Solution

We are asked to evaluate:

$$\lim_{x \rightarrow -2^+} \frac{4}{(x+2)^3}$$

Step 1: Analyze the denominator

As $x \rightarrow -2^+$, we approach -2 from the right, so:

$$x + 2 \rightarrow 0^+ \quad (\text{a small positive number})$$

Now consider the cube:

$$(x + 2)^3 \rightarrow 0^+ \quad (\text{still positive, but very small})$$

Step 2: Behavior of the expression

Since the numerator is positive and the denominator approaches a very small positive number:

$$\frac{4}{(x+2)^3} \rightarrow +\infty$$

Conclusion:

$$\boxed{\lim_{x \rightarrow -2^+} \frac{4}{(x+2)^3} = \infty}$$