

**Answer on Question #78772 – Math – Calculus
Question**

Find the indicated limit, if it exists.

Limit of $f(x)$ as x approaches -1 where $f(x)$

$$f(x) = \begin{cases} 4 - x, & x < -1 \\ 5, & x = -1 \\ x + 6, & x > -1 \end{cases}$$

Solution

$$\lim_{x \rightarrow -1^-} f(x) = \lim_{x \rightarrow -1^-} (4 - x) = 4 - (-1) = 5$$

$$\lim_{x \rightarrow -1^+} f(x) = \lim_{x \rightarrow -1^+} (x + 6) = -1 + 6 = 5$$

Since $\lim_{x \rightarrow -1^-} f(x) = 5 = \lim_{x \rightarrow -1^+} f(x)$, then $\lim_{x \rightarrow -1} f(x)$ exists and $\lim_{x \rightarrow -1} f(x) = 5$.

Answer: $\lim_{x \rightarrow -1} f(x) = 5$.