

Variations on a Theme of Limits

Define each of the following limits.

1. $\lim_{x \rightarrow a^+} f(x) = L$

2. $\lim_{x \rightarrow a^-} f(x) = L$

3. $\lim_{x \rightarrow \infty} f(x) = L$

4. $\lim_{x \rightarrow -\infty} f(x) = L$

5. $\lim_{x \rightarrow \infty} f(x) = \infty$

6. $\lim_{x \rightarrow \infty} f(x) = -\infty$

7. $\lim_{x \rightarrow -\infty} f(x) = \infty$

8. $\lim_{x \rightarrow -\infty} f(x) = -\infty$

9. Show that $\lim_{x \rightarrow a} f(x) = L$ if and only if $\lim_{x \rightarrow a^+} f(x) = L$ and $\lim_{x \rightarrow a^-} f(x) = L$.