

Some problems to make you think about limits.

1. If $f(x)$ has the following properties, graph $f(x)$.

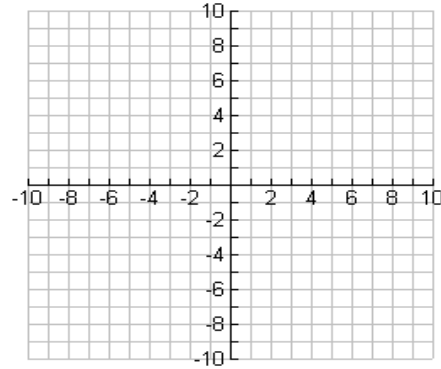
(a) $\lim_{x \rightarrow -3^-} f(x) = \infty$ (b) $\lim_{x \rightarrow -3^+} f(x) = -\infty$

(c) $\lim_{x \rightarrow -\infty} f(x) = 0$ (d) $\lim_{x \rightarrow \infty} f(x) = +\infty$

(e) y-intercept at (0,5)

(f) only roots at (-1,0) and (-5,0)

(g) Point at (3,2)



2. $f(x) = \begin{cases} x^2 + 5, & x \neq 1 \\ -3, & x = 1 \end{cases}$ What is happening on this piecewise function?

3. $f(x) = \begin{cases} \frac{1}{x-3}, & x \neq 3 \\ 5, & x = 3 \end{cases}$ What is happening on this piecewise function?

4. $g(x) = \begin{cases} \frac{x^2 - 9}{x + 3}, & x \neq -3 \\ 7, & x = -3 \end{cases}$ What is happening on this piecewise function?

5. For the given table of values what limit situation does it simulate?

x	2.5	2.9	2.99	2.999	2.9999	2.99999
f(x)	10	50	500	5000	50000	500000