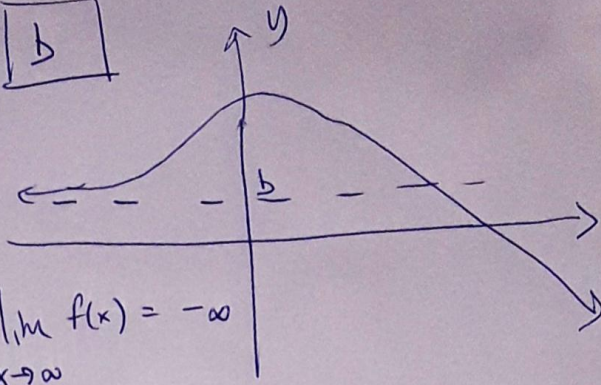


The HA of $f(x)$ is $y = b$:

if $\lim_{x \rightarrow \infty} f(x) = b$

$x \rightarrow \infty$

$x \rightarrow -\infty$



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

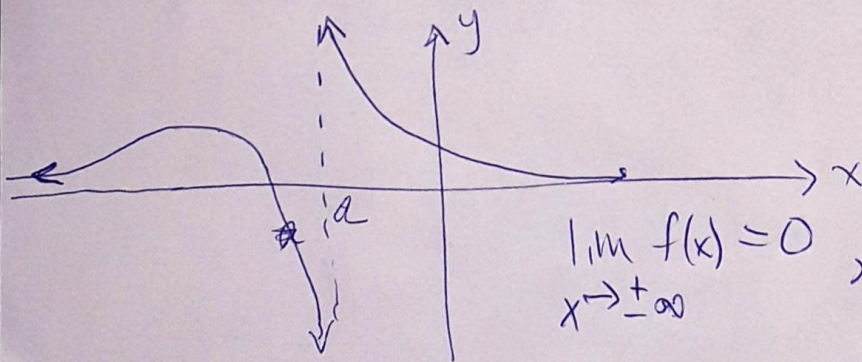
$\lim_{x \rightarrow -\infty} f(x) = b$

The VA of $f(x)$ is ~~at~~ $x = a$

if $\lim_{x \rightarrow a} f(x) = \infty$ or $-\infty$

$x \rightarrow a$

or both



$\lim_{x \rightarrow \pm\infty} f(x) = 0$

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

HA: $y = 0$

VA: $x = a$