Math 16A
Vogler

Limits Involving Infinity and Asymptotes

Fact In the context of limits with C a positive number, we have

1) $\frac{|C|}{0^+} = +\infty$

2) $\frac{|C|}{0^-} = -\infty$

3) $\frac{|C|}{\pm\infty} = 0$

Defn Consider the function $y = f(x)$

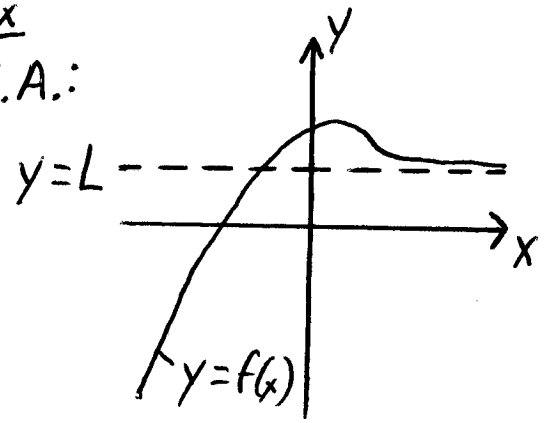
1) A line $y = L$ is a horizontal asymptote (H.A.) if $\lim_{x\to\infty} f(x) = L$ or $\lim_{x\to-\infty} f(x) = L$

2) A line $x = a$ is a vertical asymptote (V.A.) if $\lim_{x\to a^+} f(x) = \pm\infty$ and/or $\lim_{x\to a^-} f(x) = \pm\infty$.

Note: Vertical asymptotes usually occur when there's division by zero in the function.

Ex

H.A.:



V.A.: