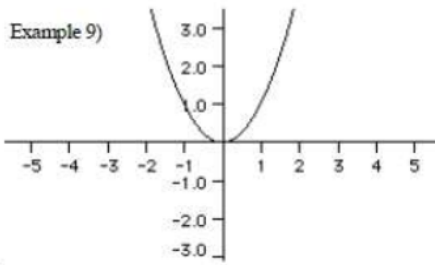


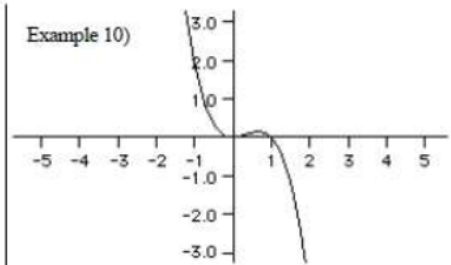
There are only 4 possibilities for  $\lim_{x \rightarrow \infty} f(x)$  or  $\lim_{x \rightarrow -\infty} f(x)$ :

- the curve can go up forever. In that case, the limit does not exist. For convenience sake, we will say  $\lim_{x \rightarrow \infty} f(x) = \infty$

- the curve can go down forever. In that case, the limit does not exist. For convenience sake we will say  $\lim_{x \rightarrow \infty} f(x) = -\infty$



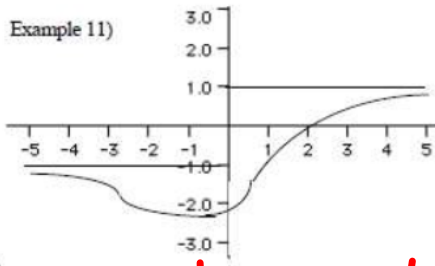
In this case,  $\lim_{x \rightarrow \infty} f(x) = \underline{+\infty}$



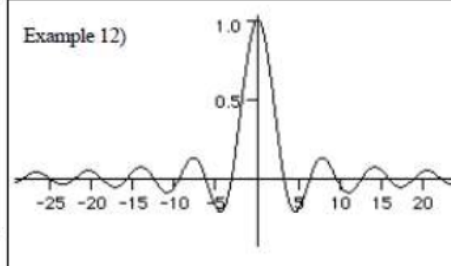
In this case,  $\lim_{x \rightarrow \infty} f(x) = \underline{+\infty}$

- the curve can become asymptotic to a line. In that case the limit as  $x$  approaches infinity is a value.

- the curve can level off to a line. In that case, the limit as  $x$  approaches infinity is a value.



In this case,  $\lim_{x \rightarrow \infty} f(x) = \underline{1}$  and  $\lim_{x \rightarrow -\infty} f(x) = \underline{-2}$



In this case,  $\lim_{x \rightarrow \infty} f(x) = \underline{0}$  and  $\lim_{x \rightarrow -\infty} f(x) = \underline{0}$