Example (1)  
Check out this example!

Example (2)  
Let $f : \mathbb{R}^2 \to \mathbb{R}$ be continuous.

Example (3)  
Suppose that we have a series  
$$
\sum_{n=0}^{\infty} \left( \frac{a_n}{b_n} \right)^n < \infty,
$$
where $\frac{a_n}{b_n} < 1$ for all $n$.

Example (4)  
$$
|f(x_n) - f(x)| < \varepsilon, \text{ for all } n \text{ such that } n \leq M.
$$

Example (5)  
Suppose that $\{f_n\}$ are uniformly continuous functions which converge uniformly to $f$.

Example (6)  
For every $\varepsilon$, there exists a $\delta...
Example (7)

\[ \text{Re}(z) = \frac{z + \bar{z}}{2} \]

Example (8)

Define \( f : \mathbb{R}^3 \rightarrow \mathbb{R} \) by

\[ f(\bar{x}) = \bar{x}^T A \lambda \bar{x} \]

where

\[
A = \begin{bmatrix}
3 - \lambda & 2 & 0 \\
-2 & 4 - \lambda & 1 \\
-2 & 2 & 3 - \lambda
\end{bmatrix}, \lambda \in \mathbb{R}.
\]

What happens when \( \lambda = 2 \) in Equation (1), and how does this affect \( f \)?

Example (9)

Show that \( x^p \xrightarrow{\text{x} \to \infty} \infty \) for \( p > \infty \).