Why

Often the chain considered in optimization is the real numbers.

Definition

A function from a non-empty set to the real numbers, in the context of optimizers, is called an *objective function* for the *feasible set* (its domain). Suppose the feasible set is a subset of real numbers. Often we can specify a function defined for every real number. The *objective function* is the restriction of this function to those elements which are *feasible*.

Notation

Let D be a non-empty set, a mnemonic for "domain." Let $f : D \to \mathbf{R}$. Often we have $g : A \to \mathbf{R}$, where $D \subset A$. So f is the restriction of g to the feasible set D. In this case the language feasible set language is especially useful, as an correspond to a mimimal element of $g(A)$, a larger set than $g(D)$. In this case, it is useful to speak of feasible elements.

Real Optimizers

Real Numbers Optimizers

Rational Numbers Total Orders

Integer Numbers Partial Orders

Zero Relations

Equation Solutions Natural Numbers Ordered Pairs

Set Intersections Set Unions Unordered Pairs

Equations Set Specification Empty Set

Set Inclusion

Sentences Set Equality

Identity Sets Standardized Accounts

Accounts

Quantified Statements Deductions

Logical Statements

Statements

Objects