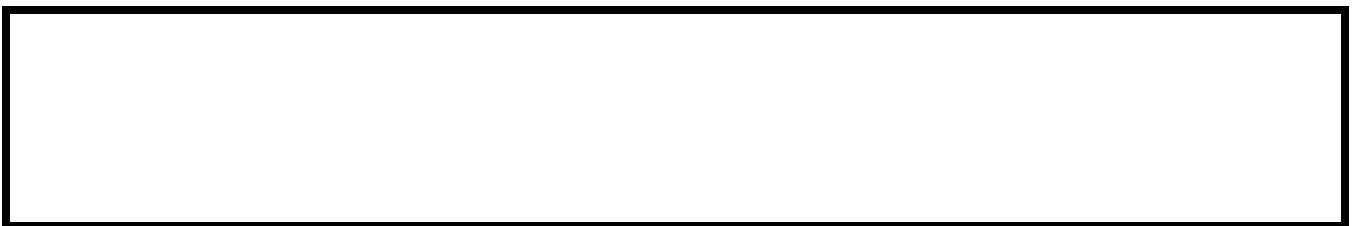

4. CONVEX OPTIMIZATION PROBLEMS

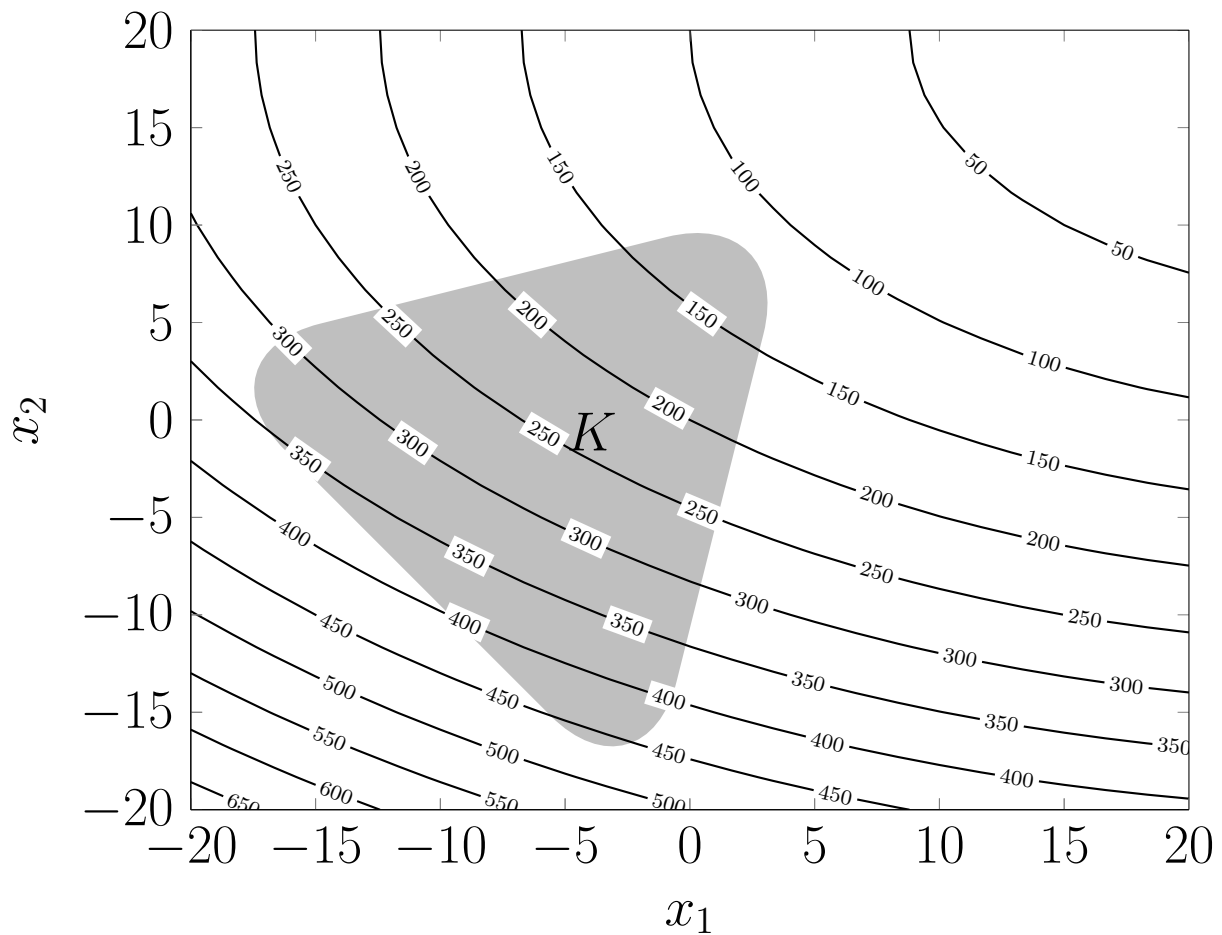
CONVEX OPTIMIZATION

Optimization problem

Definition of convex optimization problem



OPTIMALITY CRITERION



Optimality criterion for a differentiable function

Unconstrained problems	
Equality constrained problems	
Minimize over non-negative orthant	

EQUIVALENT CONVEX PROBLEMS

Eliminating equality constraints

Introducing equality constraints

Slack variables

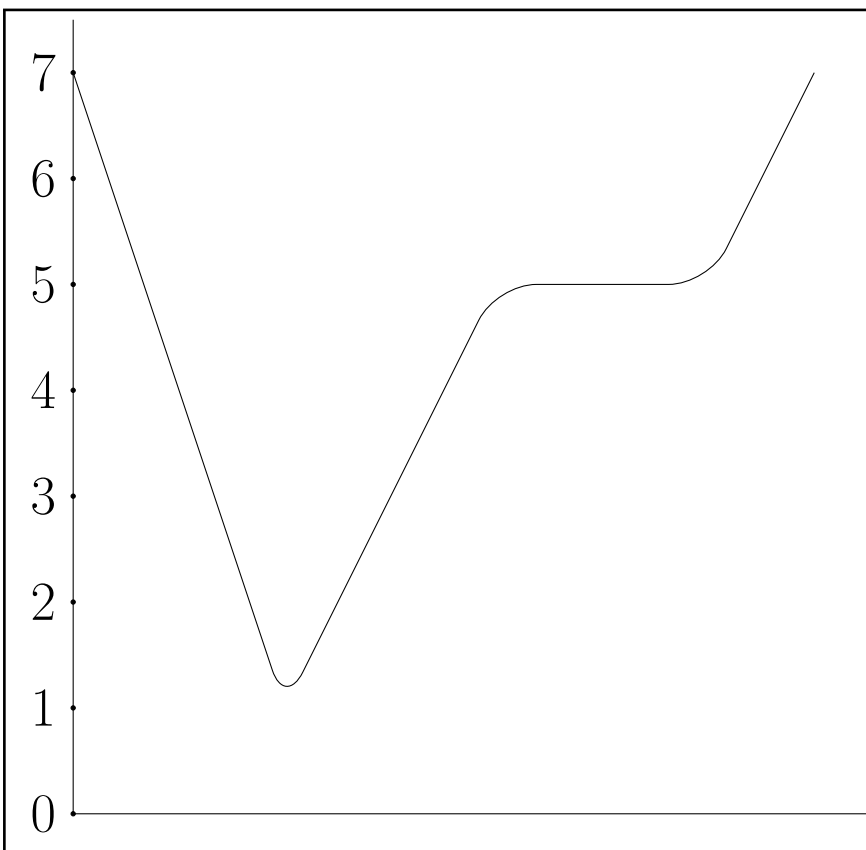
Epigraph problem form

Minimizing over some variables

QUASICONVEX OPTIMIZATION

Definition of quasiconvex optimization problem

How to solve quasiconvex optimization problem



Bisection method

given _____

repeat _____

1.

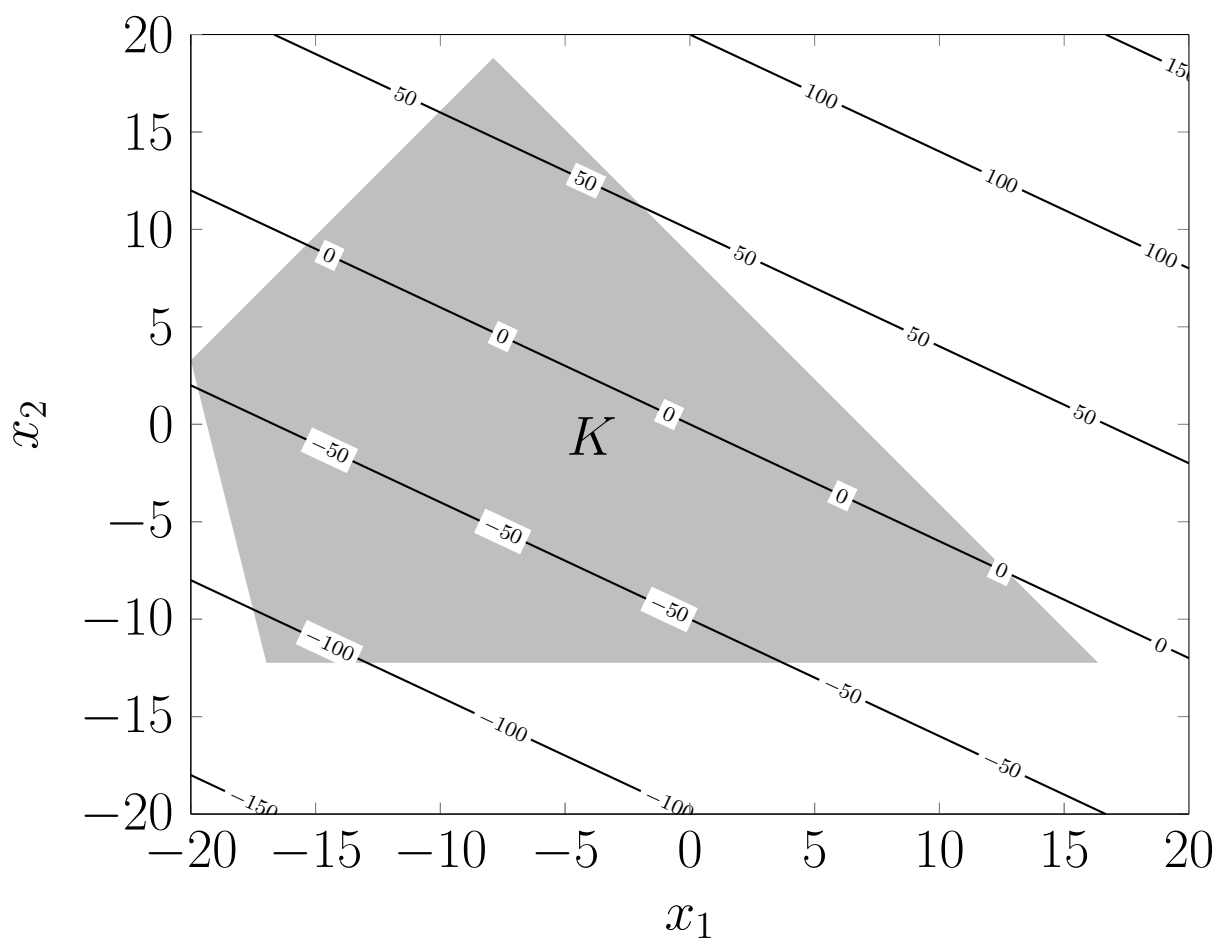
2.

3.

until _____

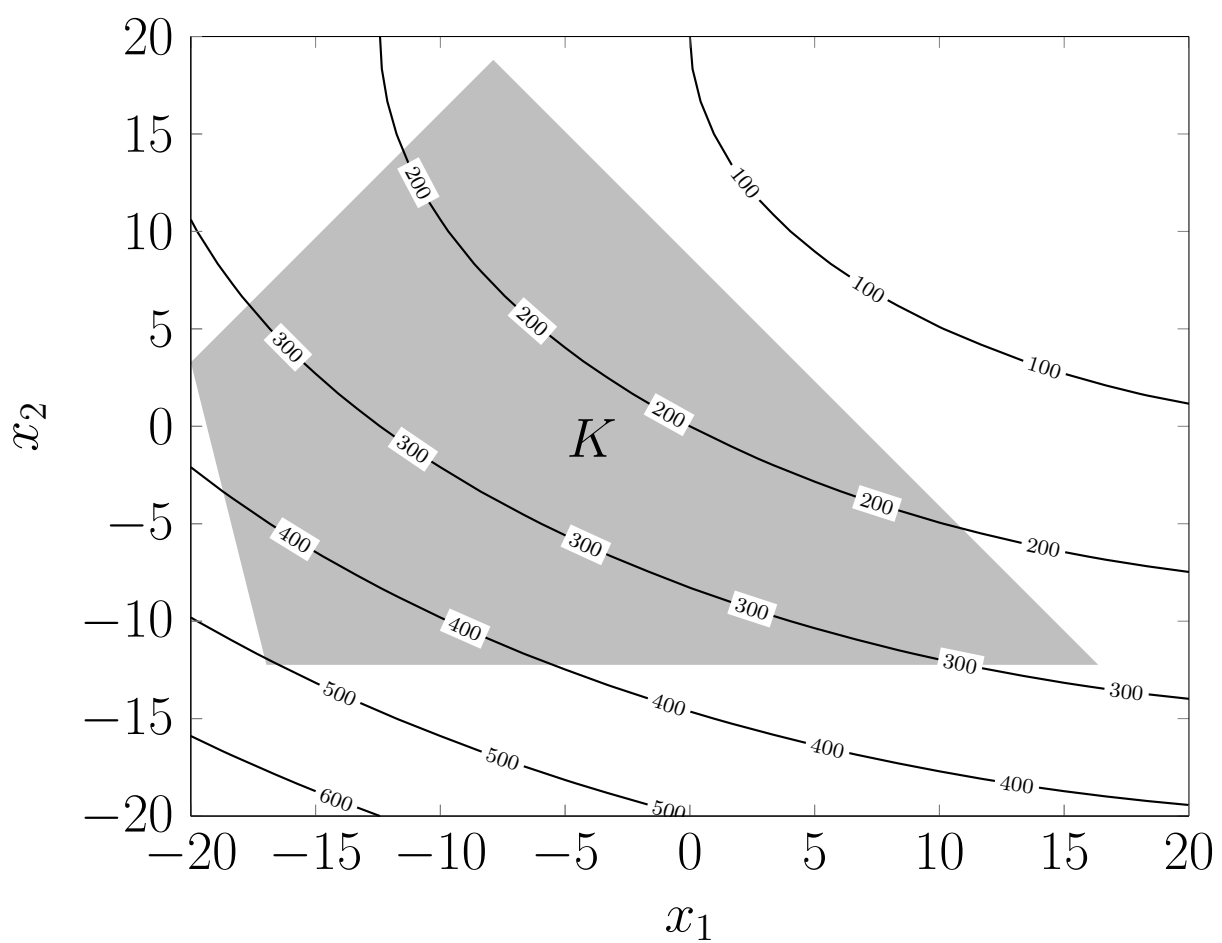
LINEAR OPTIMIZATION PROBLEMS

Definition of linear optimization problem



QUADRATIC OPTIMIZATION PROBLEMS

Definition of quadratic optimization problem



SECOND-ORDER CONE PROGRAMMING

Definition of second-order cone program (SOCP)

GEOMETRIC PROGRAMMING

Definition of monomial function

Definition of posynomial function

Definition of geometric programming

Geometric program in convex form

GENERALIZED INEQUALITIES CONSTRAINTS

Convex optimization with generalized inequality constraints

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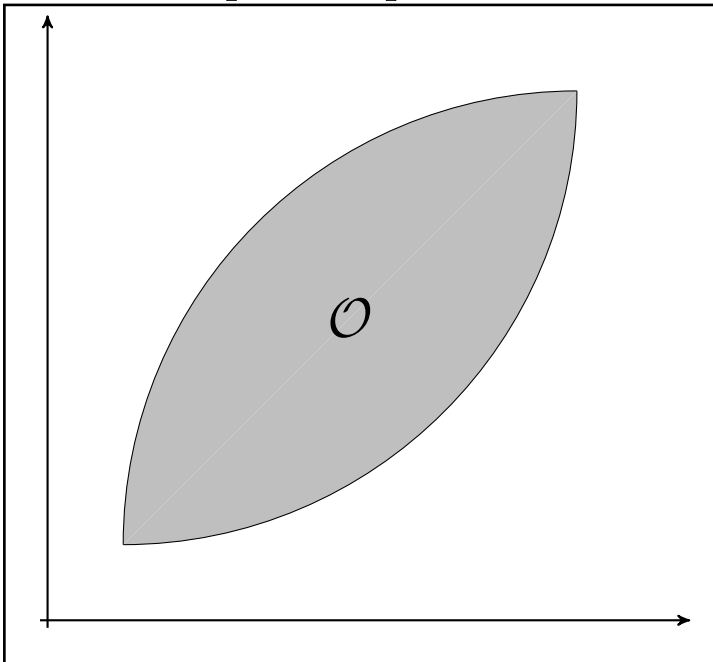
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Conic form problem	Semidefinite programming (SDP)

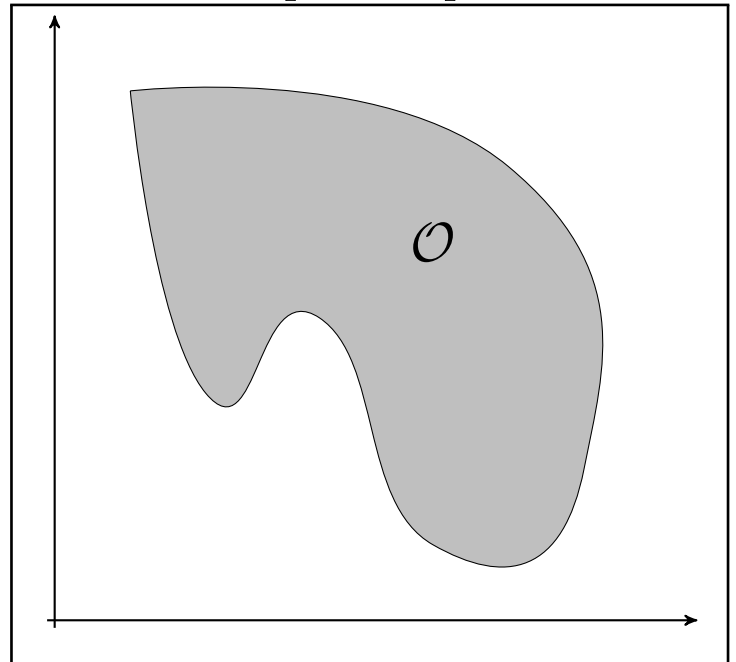
VECTOR OPTIMIZATION

Definition of vector optimization problem

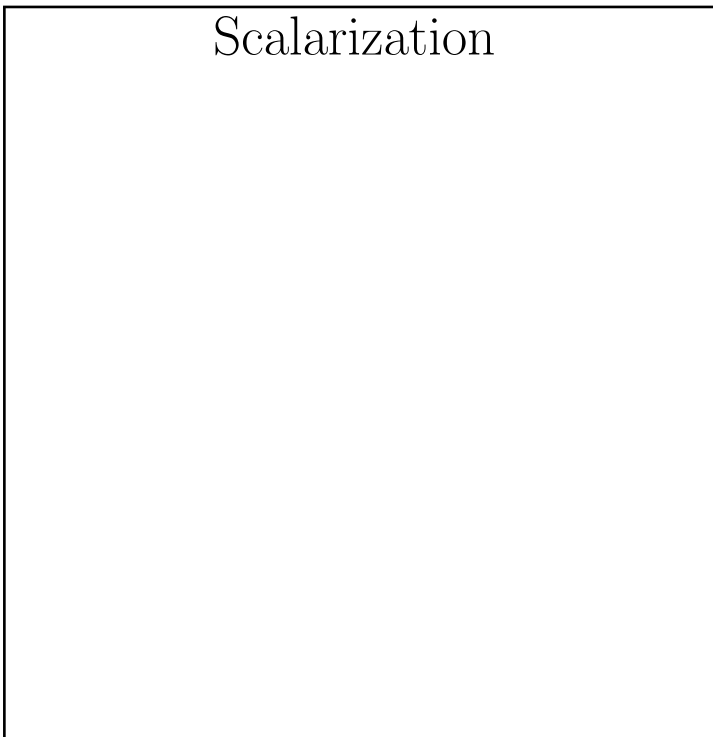
Optimal points



Pareto optimal points



Scalarization



Multicriterion optimization

