Problems Handled by Optimization Toolbox Functions

The following tables show the functions available for minimization, multiobjective optimization, equation solving, and solving least-squares (model-fitting) problems.

Minimization Problems

Type	Formulation	Solver
Scalar minimization	$\min_x f(x)$ such that $lb < x < ub$ (x is scalar)	`fminbnd`
Unconstrained minimization	$\min_x f(x)$	`fminunc`, `fminsearch`
Linear programming	$\min_x f^T x$ such that $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$	`linprog`
Mixed-integer linear programming	$\min_x f^T x$ such that $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$, x(intcon) is integer-valued	`intlinprog`
Quadratic programming	$\min_x \frac{1}{2} x^T H x + c^T x$ such that $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$	`quadprog`
Cone programming	$\min_x f^T x$ such that $\|A \cdot x - b\| \le d^T \cdot x - \gamma$, $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$	`coneprog`
Constrained minimization	$\min_x f(x)$ such that $c(x) \le 0$, $ceq(x) = 0$, $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$	`fmincon`
Semi-infinite minimization	$\min_x f(x)$ such that $K(x,w) \le 0$ for all w, $c(x) \le 0$, $ceq(x) = 0$, $A \cdot x \le b$, $Aeq \cdot x = beq$, $lb \le x \le ub$	`fseminf`