Results

This section presents the experimental results from the gradient descent optimization study, including convergence analysis and performance comparisons.

Convergence Analysis

Convergence Trajectories

Figure 1 illustrates the convergence behavior of gradient descent for different step sizes, starting from the initial point $x_0 = 0$. The algorithm iteratively updates the solution using the rule $x_{k+1} = x_k - \alpha \nabla f(x_k)$.