Convex Optimization

Assignment -5

(Graded)

1. For each of the following functions, compare the different methods (steepest descent, Newton's method, different quasi-Newton's methods, conjugate gradient) in terms of number of iterations until convergence and trajectories:

$$f_1(x, y) = \frac{1}{2}(x^2 + 10y^2)$$

$$f_2(x, y) = 100(y - x^2)^2 + (1 - x)^2$$

$$f_3(x, y) = e^{x+3y-0.1} + e^{x-3y-0.1} + e^{-x-0.1}$$

Test different starting points, and different parameters for Armijo's rules.