Assignment 1

The aim is to solve the optimization problem as shown.

\[
\text{Minimize } f(x, y) = x^2 + y^2 \\
\text{Subject to } \begin{align*}
    g_1(x, y) &= x + y - 1 \\ 
    g_2(x, y) &= x - y - 1
\end{align*}
\]

1. Write the three optimization constraints in equation form.

2. Formulate the Lagrangian and find the equations of the first order condition of optimality.

3. Solve the system of equations and obtain the optimal solution.

4. Check for any constraints that are binding at the optimal solution.

5. Explain the economic interpretation of the optimal solution.