talent sprint | Indian Institute of Science भारतीय विज्ञान संस्थान

1. Use least-squares regression to fit a straight line to:

x	y
2	4
3	5
5	7
7	10
9	15

2. Explain the Exact Line Search algorithm using Steepest Descent Method.

3. Use exact line search method to solve the following unconstrained optimization problem for an optimal value of the step size α and the minima:

$\min_{A,B} f(x) = x_1 - x_2 + 2x_1x_2 + 2x_1^2 + x_2^2$

4. Given the function $f(x_1, x_2) = x_1^2 - x_1x_2 + 3x_2^2 - 15x_1 - 9x_2$. Does the function $f(x_1, x_2)$ have local minima or global minima?