talent sprint | Indian Institute of Science भारतीय विज्ञान संस्थान

1. Explain what is meant by Local Maxima and Minima?

2. Find the local minima and maxima of the function $f(x) = x^3 - 3x^2 + 1$.

3. What is the gradient descent algorithm?

4. Consider the function $f(x) = x^4$. Find the critical values and classify them whether they give local minima/maxima or global minima/maxima.

5. Explain in brief on what is Taylor Series.

6. Find out the Taylor Series of $log(1 + x)$ at $x = 0$.

7. Let $f(x, y) = x^2y$. (a) Find $\nabla f(3, 2)$. (b) Find the derivative of f in the direction of $(1, 2)$ at the point $(3, 2)$.

8. What are convex functions. State the necessary conditions for a function to be convex.