

Notes

Examples

Example 1. Find all local extrema of

$$f(x, y) = 11 + 8x - 5y - 3x^2 - \frac{7y^2}{2}.$$

Example 2. Let h be a function whose first order partial derivatives are

$$h_x = -2x + y \quad \text{and} \quad h_y = x - \frac{9}{32}y^3.$$

Find and classify the critical points of h .

Example 3. Find and classify the critical points of the function

$$g(u, v) = 3u^2v + 48uv + 4v^2.$$

Example 4. Find and classify the critical points of the function

$$f(x, y) = 54x^4 + 64x + \frac{16}{3}y^3 - y + 2.$$