Department of Mathematics, University of Hamburg   **WiSe 2023/24**
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Analysis III for Engineering Students
Work Sheet 4

Exercise 1:

Compute the Taylor polynomial of second degree for the function

$$f(x, y) = (y + \cos y) \sin x$$

about the point $(x_0, y_0) = \left(\dfrac{\pi}{2}, 0 \right)$ and provide the upper bound for the error of approximation of f by T_2 at point $(x, y) = (0, 0)$.

Exercise 2:

Compute and classify all stationary points of the following functions

a) $f(x, y) = \dfrac{3x^2}{2} + x^3 - y^3 + 3y$,

b) $f(x, y) = 2(x^2 + y^2)^2 - x^2 - y^2$,

c) $f(x, y) = \sqrt{x^2 + y^2}$,

d) $f(x, y) = x \sin y$.

Discussion: 4.12. - 8.12.2023