Department of Mathematics, University of Hamburg **WiSe 2022/23**
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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 $(x_0, y_0) = \left(\frac{\pi}{2}, 0\right)$ 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) $f(x,y) = \frac{3x^2}{2} + x^3 - y^3 + 3y$,

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: 5.12. - 9.12.2022