

Quiz Math 201 28.04.2010

Name

Stud ID

1) Find *all* the *second order partial derivatives* of the function

$$z = \frac{xy}{x + \sin y}.$$

2) Find the limit, if it exists, or show that limit does not exist.

$$\lim_{(x,y) \rightarrow (0,0)} \frac{xy}{\sqrt{x^2 + y^2}}$$

3) a) *Identify and sketch* the traces of the surface $x^2 + 4z^2 - y - 1 = 0$ in the plane $x = 2$, and in the plane $y = k$, where k is an arbitrary constant.

b) Then *name and sketch* the surface.

4) Change from rectangular to spherical coordinates: $(-3, \sqrt{3}, 6)$.

5) Determine *the linearization of the function* z defined implicitly by the equation

$$e^z + 3xz + 2x^4e^y = 3 \quad \text{at the point } P(1,0,0).$$