Differential Geometry of Curves and Surfaces

Homework 8

Due on November 22

1. Consider the surface $S = \{(x, y, z) \in \mathbb{R}^3 : z = xy\}$. Compute, at the point $(0, 0, 0) \in S$:

   (a) The mean curvature.

   (b) The Gaussian curvature.

   (c) The principal curvatures.

   (d) The principal directions.