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DELAUNAY SURFACES IN TERMS OF WEIERSTRASSIAN FUNCTIONS

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Abstract. Strangely enough (in view of the long time since their original discovery) the description of the Delaunay surfaces via the Weierstrassian functions is absent in the literature. Here we have filled this gap by providing this missing explicit parameterization along with some comments about the alternative parameterization in terms of elliptic integrals.

1. Delaunay Surfaces

Almost two centuries ago the French mathematician Delaunay [3] has classified all surfaces of revolution in $\mathbb{R}^3$ with a constant mean curvature. The respective (and exhaustive) list includes planes, cylinders, spheres, catenoids, unduloids and nodoids. In an Appendix to that paper Sturm characterized these surfaces variation-

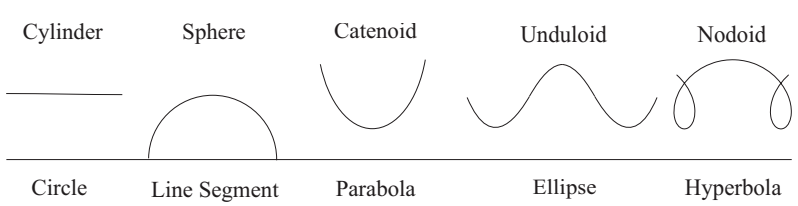

Figure 1: The profile curves of the Delaunay's surfaces obtained by rolling the conics listed below them.