**MASS-07; GEOMETRY**

FALL 2007

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HOMEWORK # 2

August 31, 2007

Due on Friday, September 7

**5.** Write a parametric representation of a Möbius strip embedded into $\mathbb{R}^3$ without self-intersections.

**6.** Find all geodesics (curves which are the shortest between any two sufficiently close points belonging to them on the round cylinder

$$\{(x, y, z) \in \mathbb{R}^3 : x^2 + y^2 = 1\}$$

and the upper half of the round cone

$$\{(x, y, z) \in \mathbb{R}^3 : x^2 + y^2 - z^2 = 0,\ z \geq 0\}.$$

**7.** Write at least five propositions from Euclidean geometry which are true in the projective plane and at least three propositions which are true in Euclidean geometry and are not true in the projective plane. Each proposition must include statements about configurations of lines and/or isometries and none of the two should be trivial reformulations of each other.