

## DIFFERENTIAL GEOMETRY HOMEWORK 7

LECTURER: SIU-CHEONG LAU

- (1) Consider the parametrized surface  $f = (u, v, u^2 - v^2)$ . Compute  $\Gamma_{ij}^k|_{(u,v)=0}$  defined via

$$\text{pr}_{Tf} \cdot \partial_i \partial_j f = \Gamma_{ij}^k \partial_k f.$$

- (2) Show that all geodesics on a circular cylinder parametrized by

$$f(u, v) = (\cos u, \sin u, v)$$

are either straight lines, circles, or helices.

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