

Differential Geometry III – Homework 10

Submission: January 30, 2019, 12:15 am

1. Exercise (4 points)
Show: Let M_h be a polyhedral surface. Then all (affine) linear maps $u_h : M_h \rightarrow \mathbb{R}^d$ are discrete harmonic if and only if M_h is a discrete minimal surface.

2. Exercise (4 points)
Let M be a simply connected 2-manifold and let $\varphi : M \rightarrow \mathbb{R}^2$ be a chart as defined in the lecture. Consider the standard frame in \mathbb{R}^2 and its rotation by $J = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$. How does the pullback of J with resp. to $D(\varphi^{-1})$ look like?

Total: 8