

Advanced Topics in Geometry A1 (MTH.B405)

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Notice

- ▶ Next week (June 06, 2025) is the final class of MTH.B405. *Application(s) of the Fundamental Thm*
- ▶ Please fill the form "Course Survey" in LMS. *within next week.*
(historical remarks outline of construction of constant mean curvature surfaces

Q and A

Gauss - ~~Weingarten~~ Codazzi

Q: If the first and second fundamental forms that satisfy G-W formula are given, does there exist a unique surface corresponding to them? **Yes** (Fundamental

Q: If all g_{ij} and K are given, can we deduce all h_{ij} ? **Yes** (7hm)

No $\uparrow$ the Gaussian curvature $\uparrow$ 2nd f.f.
1st fundamental form

$p_1(u, v) = (u, 0, v) \rightarrow$ xz -plane $\mathcal{V}_1 = \text{const} - dp \cdot dv$
 $ds_1^2 = du^2 + dv^2 \quad K=0 \quad \mathbb{I}=0$

$p_2(u, v) = (\cos u, \sin u, v) \quad \mathcal{V}_2 = (\cos u, \sin u, 0)$
 $ds_2^2 = du^2 + dv^2 \quad K=0 \quad \mathbb{I} = -du^2$

