

Tutorial Week 7

MATH3968: Differential Geometry

Semester 2, 2009

Lecturer: Emma Carberry

“Lecture Notes” refers to *Lecture Notes for Differential Geometry, MATH3968* by Nigel O’Brien. “do Carmo” refers to *Differential Geometry of Curves and Surfaces*, by Manfredo do Carmo.

Required Problems

1. Show that the sum of the normal curvatures for any pair of orthogonal directions at a given point $p \in S$ is $2H(p)$.
2. do Carmo §3.2 p151 Q13
3. do Carmo §3.2 p151 Q14
4. do Carmo §3.3 p168 Q6
5. Lecture Notes, Exercise Set 7, Q3

Recommended Problems

6. Lecture Notes, Exercise Set 7, Q2

Note: Sectional curvature is what we have been referring to in lectures as normal curvature. An elliptic point is one where the Gauss curvature $K(p) > 0$, or equivalently, the principal curvatures have the same sign.

7. do Carmo §3.3 p168 Q16