

Math 5378, Differential Geometry
Homework 9
Due in-class on **Wednesday, April 9**

Numbered exercises are from Do Carmo, *Differential Geometry of Curves and Surfaces*.

1. Section 4.2, number 1.
2. Section 4.2, number 2.
3. Section 4.2, number 11.
4. Section 4.3, number 1.
5. Section 4.3, number 3.
6. Section 4.3, number 8.
7. If a coordinate chart \mathbf{x} is conformal, i.e. $E = G = \lambda(u, v)$ and $F = 0$, find explicit formulas for the Christoffel symbols and Gaussian curvature in terms of λ and its partial derivatives.
8. In the situation of the previous problem, express the Mainardi-Codazzi equations in terms of λ .