

Riemannian Geometry, Hints 8

8.1 a) You can compute using the following plan:

- write $X(t) = \sum a_i(t) \frac{\partial}{\partial x_i}$;
- calculate Christoffel symbols;
- use Γ_{ij}^k to find the action of the covariant derivative $\frac{D}{dt}$ on X ;
- write a system of ODEs using the “parallel condition”;
- solve it;
- find X .

8.2 Follow the same scheme as in 8.1.

8.3 Use Riemannian property of the Levi-Civita connection.