Durham University, Anna Felikson Michaelmas 2015

Riemannian Geometry, Hints 10

10.3 Consider $F(s,t) = exp_{c(t)} sX(t)$.

10.4 (a) Show that $\frac{\partial}{\partial x_i}\big|_p = v_i$.

(b) Write the equation of geodesic $\frac{D}{dt}c' = 0$ in the coordinates.

(c) Evaluate the equations obtained at (b) at $t = 0$; choose vectors $w = e_i$ and $w = e_i + e_j$ to find $\Gamma^k_{ii}(p)$ and $\Gamma^k_{ij}(p)$.