Aufgabe 8 7.12.10

Notiztitel Mathematical Gauge Theory WS 10/11

(a) As an additional local structure equation find a formula expressing the F_{ijs}^{r} of the curvature $F = F_D$ of a connection D in terms of the Γ_{ijs}^{r} and its derivatives.

(b) Prove : $\overline{\textcircled{H}} = \bar{g}^{-1} \textcircled{H} g$ under a change of frame g.

(c) Prove : E orientable $\Leftrightarrow$ $\det E$ is trivial.

(d) Show that a vector bundle E of rank k is orientable if and only if there exists an atlas of bundle charts whose transition functions have their values in $SO(k)$.