1. Do Carmo 4-4: 1 (nonrectilinear just means “not a straight line”), 4, 8, 22

2. Finish the proof of the existence and uniqueness of parallel transport (we proved this under the assumption that \( \alpha(I) \) is contained in an orthogonal coordinate neighborhood).

3. Suppose that \( \gamma : I \to S \) satisfies

\[
\frac{D\gamma'}{dt} = f(t)\gamma'(t)
\]

for some differentiable function \( f(t) \) if and only if \( \gamma(t) \) can be re-parametrized so as to be a geodesic.