

1

Choose a particular classical solution to Dirac equation and show that, in the massless limit, it is an eigenvector of both helicity and chirality.

2

Consider the case of Bhabha scattering: $e^+ e^- \rightarrow e^+ e^-$
Write down the Feynman Diagrams, and obtain:

$$\sum |\mathcal{M}|^2$$

(answer should be in terms of traces of Dirac matrices and momenta, no need to calculate the traces)