Exercise 1:

Construct the leading-order ($\sim \lambda^4$) SCET Lagrangian in the presence of a quark mass with scaling a) $m \sim \lambda$ and b) $m \sim \lambda^2$.

Exercise 2 :

Derive the form of the SCET vector current at position $x \neq 0$ and show that it is gauge invariant.

Exercise 3 :

Work out the analytic form of the solution of the RG evolution equation for the Wilson coefficient $C_V(\mu)$ at leading order in RG-improved perturbation theory.