

Integration and Haar measure on Lie groups

Chapter VIII of Knapp (Lie groups, beyond an introduction) is one possible reference for this.

One approach would be to learn some basic results about integration and Haar measure, and to describe Haar measure for some examples.

It might be interesting to look at the following: There is an integration formula in Theorem 8.60 of Knapp (called the “Weyl integration formula” (warning: this is not the only formula that goes by that name)). Knapp sketches how the integration formula leads to a construction of an irreducible representation with given dominant analytically integral highest weight, and also to a proof of the Weyl Character Formula.