

In this thesis we study embeddings of spaces of functions defined on Carnot-Carathéodory spaces. Main results of this work consist of conditions for Sobolev-type embeddings of higher order between rearrangement-invariant spaces. In a special case when the underlying measure space is the so-called  $X$ -PS domain in the Heisenberg group we obtain full characterization of a Sobolev embedding. The next set of main results concerns compactness of the above-mentioned embeddings. In these cases we obtain sufficient conditions. We apply the general results to important particular examples of function spaces. In the final part of the thesis we present a new algorithm for approximation of the least concave majorant of a function defined on an interval complemented with the estimate of the error of such approximation.