Recent studies have demonstrated several methods on different approaches to classification of vectorial Boolean functions up to certain equivalence relation and to finding new quadratic Almost Perfect Nonlinear (APN) functions. In this work we explore these classification methods of vectorial Boolean functions, in particular those that minimise the search space up to EA-equivalence or linear-equivalence. We also investigate various strategies for finding quadratic APN functions. These methods are rooted in various aspects of algebraic theory. We explore the mathematical theory in more detail, and provide a guide to practical application of the theory. We also provide implementations of these methods and illustrate them in the context of the presented theory.