

# Abstract in English

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This paper studies conformal maps over the field of complex numbers with an emphasis on physical applications. In the first two parts (which are mostly theoretic) we shall introduce mathematical terms and theorems which will allow us to solve the Laplace partial differential equation in various regions with an interesting geometry in  $\mathbb{R}^2$  (parts 3 and 4). We will show how methods of the complex analysis can be applied to describe the induced charge on a conductor. In the field of aerodynamics, we will use these methods to explain the underlying principle behind the function of wings.