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Finding analytical solutions for parameter identification problems represented by nonlinear partial differential equations might be a very difficult task. For particular classes of data, certain symmetry reductions such as equivalence transformations and nonclassical equivalence transformations are useful for reducing the dimension of the model and finding its similarity solutions. In the case of a particular parameter identification problem arising in heat conduction, I will discuss a method that might be applied for other classes of data; this technique allows us to reduce the order of the problem and express its solution in terms of the new variables. (Received September 12, 2007)