



RESEARCH ARTICLE

Evaluating the Derivatives of Two Types of Functions

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Abstract—This paper uses the mathematical software Maple for the auxiliary tool to study the differential problem of two types of functions. We can obtain the closed forms of any order derivatives of these two types of functions by using Euler's formula, DeMoivre's formula, finite geometric series and Leibniz differential rule, and hence greatly reduce the difficulty of calculating their higher order derivative values. In addition, we provide two examples to do calculation practically. The research methods adopted in this study involved finding solutions through manual calculations and verifying these solutions by using Maple. This type of research method not only allows the discovery of calculation errors, but also helps modify the original directions of thinking from manual and Maple calculations. Therefore, Maple provides insights and guidance regarding problem-solving methods.

Keywords—derivatives, closed forms, Euler's formula, DeMoivre's formula, finite geometric series, Leibniz differential rule, Maple

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