



Solving Improper Integrals with Maple

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Abstract—This study takes the mathematical software Maple as the auxiliary tool to evaluate some type of improper integrals. We can obtain the infinite series form of this type of improper integrals by using three important methods (i.e., differentiation with respect to a parameter, differentiation term by term, and integration term by term). In addition, we propose two improper integrals 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—improper integrals, infinite series form, differentiation with respect to a parameter, differentiation term by term, integration term by term, Maple

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