

Simple Article For AMEN*

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Abstract

Solutions of the form $x(z) = \lambda z^\mu$ are found for the iterative functional differential equation $x^{(n)}(z) = (x(x(\dots x(z))))^k$.

1 Introduction

The basic idea is that a short note should be presented in a simple manner. Therefore, use simple notations, symbols, etc. Displayed equation should be labeled in the following format

$$x(z) = \lambda z^\mu, \quad (1)$$

$$x^{(n)}(z) = \left(x^{[m]}(z)\right)^k. \quad (2)$$

Lemmas, Theorems, and Corollaries should be typed such as the following:

THEOREM 1. Let Ω be a domain of the complex plane C which does not include the negative real axis (nor the origin). Then there exist m distinct (single valued and analytic) power functions of the form (1) which are solutions of (2).

Proofs should be typed as follows:

PROOF. We remark that each solution $x_i(z) = \lambda_i z^{\mu_i}$ has a nontrivial fixed point α_i . Indeed, from $\lambda_i \alpha_i^{\mu_i} = \alpha_i$, we find

$$\alpha_i = \lambda_i^{1/(1-\mu_i)} = [\mu_i(\mu_i - 1) \cdots (\mu_i - n + 1)]^{1/(k+n-1)} \neq 0,$$

...

Other texts can be typed such as the following: As an example, consider the equation

$$x'(z) = x(x(z)).$$

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From

$$\mu^2 - \mu + 1 = 0,$$

we find roots $\mu_{\pm} = (1 - \sqrt{3}i)/2$. We find $\lambda_- = \mu_-^{1/\mu_-} \approx 2.145 - 1.238i$, $\lambda_+ = \mu_+^{1/\mu_+} \approx 2.145 + 1.238i$. Since $|\mu_{\pm}| = 1$ and $\mu_{\pm}^6 = 1$, they are roots of unity. This shows that the requirements in the main Theorem in [1] does not hold. Therefore, we have found analytic solutions which cannot be guaranteed by the main Theorem in [1].

Figures should be prepared in the EPS format and placed at the center by commands such as: `centerps{width}{height}{file}`.

References should be typed as follows:

References

- [1] J. G. Si, W. R. Li and S. S. Cheng, Analytic solutions of an iterative functional differential equation, *Computers Math. Applic.*, 33(6)(1997), 47–51.
- [2] E. Eder, The functional differential equation $x'(t) = x(x(t))$, *J. Diff. Eq.*, 54(1984), 390–400.
- [3] L. W. Griffiths, *Introduction to the Theory of Equations*, 2nd ed., Wiley, New York, 1947.