EllipticExpPrime

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Notations

Traditional name

Derivative of the elliptic exponential

Traditional notation

$\text{eexp}'_z(z; a, b)$

Mathematica StandardForm notation

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EllipticExpPrime[z, {a, b}]
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Primary definition

09.56.02.0001.01

$$\text{eexp}'_z(z; a, b) == \frac{\partial \text{eexp}(z; a, b)}{\partial z}$$

General characteristics

Domain and analyticity

$\text{eexp}'_z(z; a, b)$ is an vector-valued function of z, a and b, that is analytic in each component and it is defined over $\mathbb{C}^3$.

09.56.04.0001.01

$$(z * \{a * b\}) \longrightarrow \text{eexp}'_z(z; a, b) :: (\mathbb{C} \otimes \{\mathbb{C} \otimes \mathbb{C}\}) \longrightarrow \{\mathbb{C} \otimes \mathbb{C}\}$$

Symmetries and periodicities

Mirror symmetry

09.56.04.0002.01

$$\text{eexp}'_z\left(\overline{z}; \overline{a}, \overline{b}\right) == \overline{\text{eexp}'_z(z; a, b)}$$

Periodicity

No periodicity

Branch points

Branch points locations: complicated

Branch cuts

Branch cut locations: complicated

Differential equations

Ordinary nonlinear differential equations

09.56.13.0001.01

$$27\,w(z)^4 + 8\,a\left(2\,a^2 + 9\,b\right)w(z)^2 + 64\,b^3 - 2\,w'(z)^3 - 16\,a^2\,b^2 - 12\,b\,w'(z)^2 == 0\ /;\ w(z) == \text{eexp}'_z(z;\,a,\,b)$$

Representations through equivalent functions

With inverse function

09.56.27.0001.01

$$\xi == 2\,z_2\ /;\ z_1^3 + a\,z_1^2 + b\,z_1 - z_2^2 == 0\ /;\ \{\xi,\ \eta\} = \text{eexp}'_z(\text{elog}(z_1,\,z_2;\,a,\,b);\,a,\,b)$$

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