Дз №6

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19 мая 2020 г.

1013

$$f(z) = x^2 + y^2 i \quad z = \{1 + 2i, 2 - 3i, 0, -i\}$$
$$f(1 + 2i) = (1)^2 + (2)^2 i = \underline{1 + 4i}$$
$$f(2 - 3i) = 4 + 9i \quad f(0) = 0 \quad f(-i) = (-1)^2 i = i$$

1030

$$f(z) = (e^x \cos y)_u + i(e^x \sin y)_v$$
$$\frac{\partial u}{\partial x} = e^x \cos y = \frac{\partial v}{\partial y} \quad \frac{\partial u}{\partial y} = -e^x \sin y = -\frac{\partial v}{\partial x} \Rightarrow$$

- функция дифференцируема

1035

$$f(z) = \sin x \cosh y + i \cos x \sinh y$$
$$\frac{\partial u}{\partial x} = \cos x \cosh y = \frac{\partial v}{\partial y} \quad \frac{\partial u}{\partial y} = \sin x \sinh y = -\frac{\partial v}{\partial x} \Rightarrow$$

- функция дифференцируема

$$f'(z) = \frac{\partial u}{\partial x} + \frac{\partial v}{\partial x} i = \frac{\partial v}{\partial y} - \frac{\partial u}{\partial y} i = \underline{\cos x \cosh y - \sin x \sinh y}$$

1037

$$f(z) = (y)_u + i(\lambda x)_v$$
$$\frac{\partial u}{\partial x} = 0 = \frac{\partial v}{\partial y} \quad \frac{\partial u}{\partial y} = 1 = -\frac{\partial v}{\partial x} \Rightarrow \underline{\lambda = -1}$$