

## Дз №6

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1013

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

1030

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

- функция дифференцируема

1035

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

- 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

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