Panel 1

Complex HW

① Show that the following functions are entire:

a) $f(z) = 3x + y + i(3y - x)$

b) $f(z) = \sin(x)\cosh(y) + i\cos(x)\sinh(y)$

② Show that the following functions are nowhere analytic

a) $f(z) = xy + iy$

b) $f(z) = e^y e^{ix}$

③ Suppose $f(z)$ is analytic in a domain D and $f(z)$ is real-valued. Prove that $f(z)$ must be constant.

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