

Panel 9

Homework:

① Prove that if f is analytic in a domain D and $f'(z) = 0$ in D then f is constant.

② Prove that if f is analytic in a domain D such that $f(z)$ is always real, then f is constant.

③ Are the following functions differentiable?

$$a) f(z) = -2(xy+x) + i(x^2 - 2y - y^2)$$

$$b) f(z) = \frac{y+ix}{x^2+y^2} \quad (z \neq 0)$$

④ Let $f(z) = |z|^2$. Show that f is differentiable only at 0 .

⑤ Show that $f(z) = x^2 + y^2 + i2xy$ is differentiable only on x -axis.