Panel 1

Complex HW

(1) Show that the following functions are not $\mathbb{C}$-diffble:

a) $f(z) = 2x + ixy^2$ b) $f(z) = z - \bar{z}$

c) $f(z) = e^x e^{-iy}$ Hint: check CR equations

(2) Use the CR equations to show that $f'(z)$ exists if $f(z) = z^3$ and verify that $f'(z) = 3z^2$

(3) Let $f(z) = x^3 + i(1-y)^3$. Show that f is $\mathbb{C}$-diffble only for $z = i$ and find $f'(z)$

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