Panel 1

Complex Homework

① Prove that $\lim_{z \to i} |3z+1| = |3i+1|$

Hint: You need to find a $\delta > 0$ s.t. if $|z-i| < \delta$ it follows that $|f(z)-L| < \varepsilon$. Start with last expression and work "backwards" until you recognize $|z-i| < ?$. Then you know which δ to pick.

② Show that $\lim_{z \to 0} \left(\frac{z}{\bar{z}}\right)^2$ does not exist.

Hint: Choosing $(x,0) \to (0,0)$ and $(0,y) \to (0,0)$ won't be enough. You need some other approach also ... perhaps $(x,x) \to (0,0)$...