Homework 03

1. Assume the operators

$$\frac{\partial}{\partial z} := \frac{1}{2} \left(\frac{\partial}{\partial x} - i \frac{\partial}{\partial y} \right)$$

and

$$\frac{\partial}{\partial \bar{z}} := \frac{1}{2} \left(\frac{\partial}{\partial x} + i \frac{\partial}{\partial y} \right).$$

Then proof the following Leibniz rules for complex-valued functions $F(z, \bar{z})$ and $G(z, \bar{z})$:

$$\frac{\partial}{\partial z}(FG) = G \frac{\partial F}{\partial z} + F \frac{\partial G}{\partial z},$$

$$\frac{\partial}{\partial \bar{z}}(FG) = G \frac{\partial F}{\partial \bar{z}} + F \frac{\partial G}{\partial \bar{z}}.$$