

MA 713
Comments on Feb 11 Class

Right at the end of class, I acted as if h was a positive real number. Here's what I should have said:

We are interested in

$$\left| \frac{F(z_1 + h) - F(z_1)}{h} - f(z_1) \right|$$

as $h \rightarrow 0$.

Using the choice of δ given ϵ described in class and γ , the line segment from z_1 to $z_1 + h$, we have

$$\begin{aligned} \left| \frac{F(z_1 + h) - F(z_1)}{h} - f(z_1) \right| &= \left| \frac{\int_{\gamma} f(z) dz}{h} - f(z_1) \right| \\ &= \left| \frac{\int_{\gamma} f(z) - f(z_1) dz}{h} \right| \\ &\leq \frac{\int_{\gamma} |f(z) - f(z_1)| |dz|}{|h|} \\ &< \frac{\epsilon |h|}{|h|}. \end{aligned}$$