

Ex 30: $f: \mathbb{C} \rightarrow \mathbb{C}$ analytic

$$f(a+h) = f(a) + h f'(a) + \frac{1}{2} h^2 f''(a) + o(h^2)$$

$$F: h \mapsto \frac{f(a+h) - 2f(a) + f(a-h)}{h^2}$$

$$F(h) = \left(f(a) + h f'(a) + \frac{1}{2} h^2 f''(a) - 2f(a) + f(a) - h f'(a) + \frac{1}{2} h^2 f''(a) + o(h^2) \right) / h^2$$

$$= f''(a) + o(1)$$

$$\text{dc} \quad F(h) \xrightarrow{h \rightarrow 0} f''(a).$$