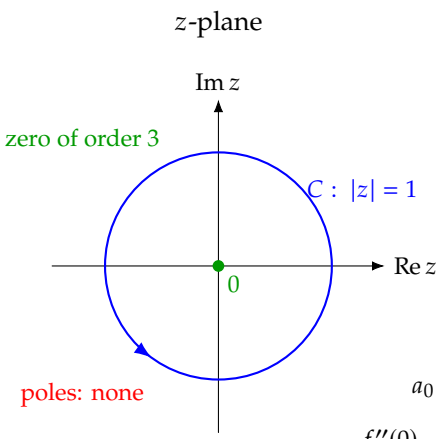

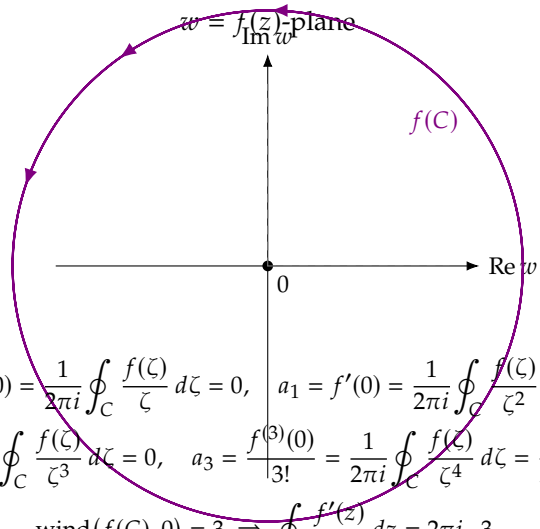

$$f(z) = z^3, \quad \operatorname{ord}_0 f = \frac{1}{2\pi i}\oint_C \frac{df}{f} = \frac{1}{2\pi i}\oint_C \frac{3z^2}{z^3}\,dz = \frac{3}{2\pi i}\oint_C \frac{dz}{z} = 3$$

$$a_0 = f(0) = \frac{1}{2\pi i}\oint_C \frac{f(\zeta)}{\zeta}\,d\zeta = 0, \quad a_1 = f'(0) = \frac{1}{2\pi i}\oint_C \frac{f(\zeta)}{\zeta^2}\,d\zeta = 0,$$

$$a_2 = \frac{f''(0)}{2!} = \frac{1}{2\pi i}\oint_C \frac{f(\zeta)}{\zeta^3}\,d\zeta = 0, \quad a_3 = \frac{f^{(3)}(0)}{3!} = \frac{1}{2\pi i}\oint_C \frac{f(\zeta)}{\zeta^4}\,d\zeta = \frac{1}{2\pi i}\oint_C \frac{5}{1}\zeta\,d\zeta = 1.$$

$$\operatorname{wind}\big(f(C),0\big) = 3 \;\Rightarrow\; \oint_C \frac{f'(z)}{f(z)}\,dz = 2\pi i \cdot 3.$$