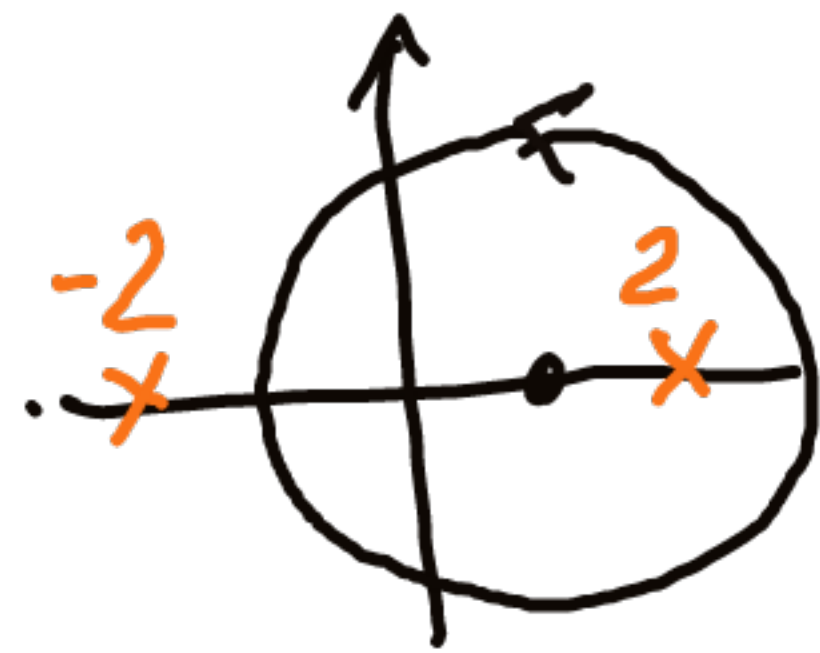


$$\int_{\gamma} \frac{1}{z^2 - 4} dz = \int_{\gamma} \frac{1}{(z-2)(z+2)} dz$$



$$\frac{A}{z-2} + \frac{B}{z+2} = \frac{1}{(z-2)(z+2)} = \frac{A(z+2) + B(z-2)}{(z-2)(z+2)}$$

$$B = -\frac{1}{4}, \quad A = \frac{1}{4}$$

$$\int_{\gamma} \left( \frac{1}{4} \cdot \frac{1}{z-2} + \frac{-\frac{1}{4}}{z+2} \right) dz =$$

$$\int_{\gamma} \frac{f(z)}{z-a} dz = 2\pi i \operatorname{Ind}_{\gamma}(a) \cdot f(a)$$

$$= \int \frac{1}{4} \frac{1}{z-2} dz + \int \underbrace{-\frac{1}{4}}_0 \frac{1}{z+2} dz =$$

$$= \frac{1}{4} \cdot 2\pi i = \frac{\pi i}{2}$$

$$g(z) = \frac{1}{z^2 - 4} = \frac{\frac{1}{4}}{z-2} + \frac{-\frac{1}{4}}{z+2}$$

*główna część*  
*reszta*  
*biegnąca g w 2*