19 $\quad x, y \in \mathbb{R}, \quad y \neq 0$

$z = x + iy$

$$\int \frac{dt}{t - z} = \int \frac{dt}{t - (x+iy)}$$

$$= \int \frac{t - (x - iy)}{(t-x)^2 + y^2} \, dt \qquad \frac{t - \bar{z}}{|t-z|^2}$$

$$= \frac{1}{2} \int \frac{2(t-x)}{(t-x)^2 + y^2} dt + i \int \frac{y}{(t-x)^2 + y^2} dt$$

$$= \frac{1}{2} \ln \left(\underbrace{(t-x)^2 + y^2}_{\geq 0} \right) + i \int \frac{\frac{1}{y}}{1 + \left(\frac{t-x}{y}\right)^2} dt$$

$+ c$

$$= \ln \underbrace{\sqrt{(t-x)^2 + y^2}}_{= |t-z|.} + i \operatorname{Arctan} \frac{t-x}{y}$$

$+ C$