$$\int_{z_1}^{z_2} \partial z = z_2 - z_1 \int_{z_1}^{z_2} z \partial z = \frac{1}{2}(z_2^2 - z_1^2).$$

S
C

$$\int_C x \partial z = iS, \int_C y \partial z = -S, \int_C z \partial z = 2iS.$$

$$I_1 = \int x \partial z, I_2 = \int y \partial z,$$

$z = 2+i$
$|z| = 1$
$(0 \leq arg z \leq \pi)$
$z = 1$
$|z-a| = R$
$\int |z| \partial z$
$z = 2-i$
$|z| = 1$
$(0 \leq arg z \leq \pi)$
$z = 1$
$|z| = 1$
$(-\pi/2 \leq arg z \leq \pi/2)$
$z = -i$
$|z| = R$
$\int_C |z| \bar{z} \partial z$
C
$|z| = 1$
$-1 \leq x \leq 1$
$y = 0$
$\int_C \frac{z}{\bar{z}} \partial z$
C
$\int (z-a)^n \partial z$
$|z-a| = R$
$(0 \leq arg(z-a) \leq \pi)$
$z = a+R$
$|z-a| = R$
a
$\int \frac{\partial z}{\sqrt{z}}$
$|z| = 1$
$y \geq 0$
$\sqrt{1} = 1$
$|z| = 1$
$y \geq 0$
$\sqrt{1} = -1$
$|z| = 1$
$y \leq$

$logR+$
$2\pi i$
$$\int\limits_{|z|=1} z^n \log z \partial z$$
n
$\log 1 = 0 \log(-1) = \pi i.$
$$\int\limits_{|z|=1} z^\alpha \partial z$$
α
$1^\alpha =$
1
a^z
$$\int\limits_{|z|=1} a^z \partial z$$
α
$(0 \leq$
$\alpha <$
$2\pi)$
$z =$
$e^{i\alpha}$
$$(1) I_1 = \int e^{-\frac{1}{z}} \partial z (2) I_p = \int e^{-\frac{1}{z^p}} \partial z$$
p
$|a| \neq$
R
$$\int\limits_{|z|=R} \frac{|\partial z|}{|z-a||z+a|} < \frac{2\pi R}{|R^2 - |a|^2|}.$$
$f(z)$
$$\lim_{r \to 0} \int_0^{2\pi} f(re^{i\phi}) \partial\phi = 2\pi f(0).$$
$f(z)$
$z =$
a
$$\lim_{r \to 0} \int\limits_{|z-a|=r} \frac{f(z)\partial z}{z-a} = 2\pi i f(a).$$
$f(z)$
$x \geq$
x_0
$0 \leq$
$y \leq$
h
$\lim\limits_{x \to \infty} f(x+$
$iy) =$
A
y
$$\lim_{x \to \infty} \int_\beta {}_x f(z) \partial z = iAh,$$
β_x
$0 \leq$
$y \leq$
h
$f(z)$
$0 <$
$|z-$
$a| \leq$
r_0
$0 \leq$
$arg(z-$
$a) \leq$
α
$(0 <$
$\alpha \leq$
$2\pi)$
$\lim\limits_{z \to a} [(z-$
$a) f(z)] =$
A
$$\lim_{r \to 0} \int_\gamma {}_r f(z) \partial z = iA\alpha,$$
γ_r
$|z-$
$a| <$
r
$f(z)$
$|z| \geq$
R_0
$0 \leq$
$arga \leq$
α