$f: C \subseteq \mathbb{C} \to \mathbb{C}$ KONT

C ... STYKKEVIS GLATT KURVE MED PARAMETRISERINGEN $z: [a,b] \to \mathbb{C}$
$t \mapsto z(t)$

$$\int_C f(z)\,dz = \int_a^b f(z(t))\,\dot{z}(t)\,dt.$$

$|f(z)| \leq M \;\; \forall z \in C.$

$$\left| \int_C f(z)\,dz \right| \leq ML$$

$L = \int_a^b |\dot{z}(t)|\,dt$ ... BUELENGDEN TIL C.

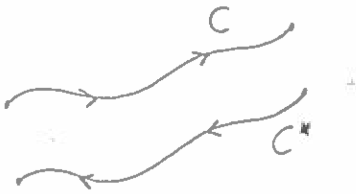
•) LINEÆR:

$f_1: C \subseteq \mathbb{C} \to \mathbb{C}$ KONT
$f_2: C \subseteq \mathbb{C} \to \mathbb{C}$ KONT
$k_1, k_2 \in \mathbb{C}$

$$\int_C (k_1 f_1(z) + k_2 f_2(z))\,dz = k_1 \int_C f_1(z)\,dz + k_2 \int_C f_2(z)\,dz.$$

•) ORIENTERT

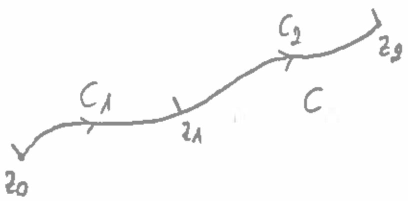
$f: C \subseteq \mathbb{C} \to \mathbb{C}$ KONT
C^* ... C MED MOTSATT ORIENTERING.



$$\int_C f(z)\,dz = -\int_{C^*} f(z)\,dz.$$

•) PARTISJON:

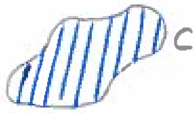
$f: C \subseteq \mathbb{C} \to \mathbb{C}$ KONT
$C_1 + C_2 = C$



$$\int_C f(z)\,dz = \int_{C_1} f(z)\,dz + \int_{C_2} f(z)\,dz.$$

$f: D \to \mathbb{C}$ ANALYTISK

D ENKELTSAMMENHENGENDE DOMENE

( $C \subseteq D \Rightarrow$ /// $\subseteq D$)

↓

$C \subseteq D$ SIMPEL LUKKET KURVE

$$\oint_C f(z)\,dz = 0$$

↓

$z_1, z_2 \in D$

$C_1, C_2 \subseteq D$ KURVER S.A.

$f: D \subseteq \mathbb{C}$ KONT

D ENKELTSAMMENHENGENDE DOMENE

$\oint_C f(z)\,dz = 0 \quad \forall C \subseteq D$ SIMPEL LUKKET KURVE

↓

$$\int_{C_1} f(z)\,dz = \int_{C_2} f(z)\,dz$$

↓

$z_0 \in D$

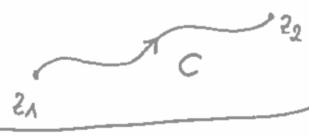
$F: D \to \mathbb{C}$

$z \longmapsto F(z) = \int_{z_0}^{z} f(z^*)\,dz^*$

↓

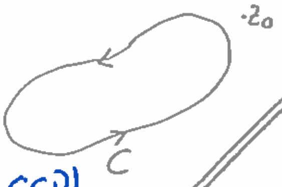
$F: D \to \mathbb{C}$ ANALYTISK

$\int_C f(z)\,dz = F(z_2) - F(z_1) \quad \forall$ KURVER $C \subseteq D$ S.A



$f: D \to \mathbb{C}$ ANALYTISK

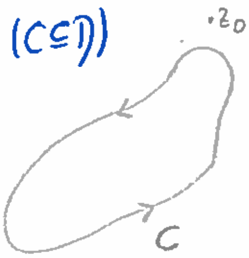
D ENKELTSAMMENHENGENDE DOMENE



$(C \subseteq D)$

$$0 = \frac{1}{2\pi i} \oint_C \frac{f(z)}{z - z_0}\, dz$$

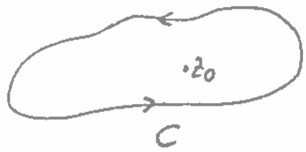
$(C \subseteq D)$



$$0 = \frac{n!}{2\pi i} \oint_C \frac{f(z)}{(z - z_0)^{n+1}}\, dz$$

$(C \subseteq D)$

$$f(z_0) = \frac{1}{2\pi i} \oint_C \frac{f(z)}{z - z_0}\, dz$$



$(C \subseteq D)$

$$f^{(n)}(z_0) = \frac{n!}{2\pi i} \oint_C \frac{f(z)}{(z - z_0)^{n+1}}\, dz.$$

$D = \mathbb{C}$

$\exists K \in \mathbb{R}$ SLIK AT

$|f(z)| \leq K \;\; \forall z \in \mathbb{C}.$

$f(z) = c$ MED $c \in \mathbb{C}$