

Cálculo IV MAT 525212/529202
Listado Integrales I

P1 Evalúe $\int_{t_0}^{t_1} F(t)dt$ donde

- | | |
|---|--|
| 1. $F = (t+i)^{-1}$ $t_0 = 0$ $t_1 = 1$ | 4. $F = te^{it}$ $t_0 = 0$ $t_1 = \pi$ |
| 2. $F = (t+i)^{-2}$ $t_0 = 0$ $t_1 = 1$ | 5. $F = (t+i)^{-1/2}$ $t_0 = 0$ $t_1 = 1$ R.P. |
| 3. $F = e^{(-1+i)t}$ $t_0 = 0$ $t_1 = \infty$ | 6. $F = (e)^{int}$ $t_0 = 0$ $t_1 = 2\pi$ $n \in \mathbb{Z}$ |

P2 Calcule el largo de las siguientes curvas

- $z(t) = (t-1)^2 + 2i(t-1)^3$ $0 \leq t \leq 2$
- $z(t) = (1+i)e^{it}$ $0 \leq t \leq \pi/2$
- $z(t) = t - \sin(t) + i(1 - \cos(t))$ $0 \leq t \leq 2\pi$

P3 Evalúe $\int_C f(z)dz$ donde f y C son

- $f = \bar{z}$ $C : z = e^{it}$ $0 \leq t \leq 2\pi$;
- $f = x + y + ie^{xy}$ $C : z = \begin{cases} t+i & t \in [1, 2] \\ 2+i(t-1) & t \in [2, 4] \end{cases}$
- $f = e^{\bar{z}}$, $(1+i)t$ $0 \leq t \leq 1$
- $f = z \operatorname{Re}(z)$ $C : z = \begin{cases} t & t \in [0, 1] \\ 1+i(t-1) & t \in (1, 2] \end{cases}$
- $f = z^{-2}$ $C : z = (1+i)t$ $1 \leq t \leq 2$
- $f = z|z|^2$ $C : t + it^3$ $|t| \leq 1$
- $f = (\bar{z} + i)^{-1}$ $C : z = i + e^{it}$ $-\pi/2 \leq t \leq \pi/2$

4 Evalúe $\oint_C (z - z_0)^{-1} dz$ sobre el cuadrado de vértices $\pm 1 \pm i$