ercice 3) pour $i=1,2,3$ on a :

$(\gamma, z_1) = 1, \quad I(\gamma, z_2) = 2, \quad I(\gamma, z_3) = 1.$

xercice 04 : $f : \mathbb{C} \to \mathbb{C}$, $f = u + iv$.

$u(x,y) = x^2 - y^2 + e^{-y} \sin x$

holomorphe $\Rightarrow f$ vérifie C.R.

$\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y} = 2x + e^{-y} \cos x$ --- (1)

$\frac{\partial v}{\partial x} = -\frac{\partial u}{\partial y} = -(-2y - e^{-y} \sin x)$ --- (2)

$\Rightarrow \frac{\partial v}{\partial y} = 2x + e^{-y} \cos x$

$\Rightarrow v(x,y) = 2xy - e^{-y} \cos x + c(x)$

$\Rightarrow \frac{\partial v}{\partial x} = 2y + e^{-y} \sin x$

$= 2y + e^{-y} \sin x + c'(x)$

$\Rightarrow c'(x) = 0 \Rightarrow c(x) = d, \ d \in \mathbb{R}$

donc $\boxed{v(x,y) = 2xy - e^{-y} \cos x + d}$ $/ d \in \mathbb{R}$

Finalement

$f(z) = x^2 - y^2 + e^{-y} \sin x + i(2xy - e^{-y} \cos x + d)$

$f(z) = (x^2 - y^2 + i2xy) - e^{-y} i (\cos x + i \sin x) + id$

$= (x+iy)^2 - ie^{-y} e^{ix} + c \ / c \in \mathbb{C}$

$= z^2 - ie^{i(x+iy)} + c$

$= z^2 - ie^{iz} + c \ / c \in \mathbb{C}$

2/ $u(x,y) = 2x^3 - 6xy^2 + x^2 - y^2$

$\frac{\partial u}{\partial x} = 6x^2 - 6y^2 + 2x = \frac{\partial v}{\partial y}$

Alors

$v(x,y) = 6x^2y - 2y^3 + 2xy + c(x)$

$\frac{\partial u}{\partial y} = -12xy - 2y$

$\frac{\partial v}{\partial x} = 12xy + 2y + c'(x)$

$\frac{\partial v}{\partial x} = -\frac{\partial u}{\partial y} \Rightarrow c'(x) = 0$

$\Rightarrow c(x) = d \ / \ d \in \mathbb{R}.$

d'où

$\boxed{v(x,y) = 6x^2y - 2y^3 + 2xy + d}$

$f(z) = 2x^3 - 6xy^2 + x^2 - y^2$

$+ i(6x^2y - 2y^3 + 2xy) + id$

$= (x^2 - y^2 + i2xy) + 2[x^3 - 3xy^2$

$+ i(3x^2y - y^3)] + id$

$= z^2 + 2z^3 + id \ / d \in \mathbb{R}$

Samsung Triple Camera
Prise avec
Galaxy A7 (2018)