

Nombre:

1. V ó F (justificar):

a) $\sqrt{i-1} = i\sqrt{1-i}$ (aquí $\sqrt{}$ es la raíz principal)

b) $[z^{-w}] = 1/[z^w]$, para todo $w \in \mathbb{C}$ y $z \neq 0$.

c) $\log(zw) = \text{Log } z + \text{Log } w + 2\pi i\mathbb{Z}$



g) Verdadero: $z = |z| \cdot e^{i\theta}$, $w = |w| e^{i\theta'}$, $z \cdot w = |z| \cdot |w| e^{i(\theta+\theta')}$

$\text{Log}(z) = \ln |z| + i \text{Arg}(z) = \ln |z| + i\theta$

$\text{Log}(w) = \ln |w| + i \text{Arg}(w) = \ln |w| + i\theta'$



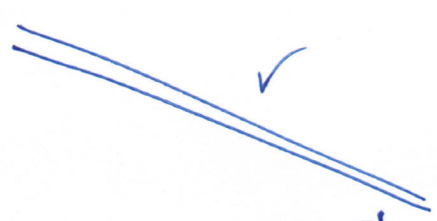
$\log(zw) = \ln |z \cdot w| + i \arg(z \cdot w) = \ln |zw| + i(\theta + \theta' + 2\pi k) = \ln |zw| + i(\theta + \theta') + 2\pi i k$
 $\parallel \checkmark$

$\text{Log}(z) + \text{Log}(w) + 2\pi i\mathbb{Z} = \ln |z| + i\theta + \ln |w| + i\theta' + 2\pi i\mathbb{Z} = \ln |zw| + i(\theta + \theta') + 2\pi i\mathbb{Z}$

b) Verdadero:
 $[z^{-w}] = e^{-w(\ln |z| + i \arg(z))}$

$[z^w] = e^{w(\ln |z| + i \arg(z))}$

$\frac{1}{[z^w]} = \frac{1}{e^{w(\ln |z| + i \arg(z))}} = [e^{w(\ln |z| + i \arg(z))}]^{-1} = e^{-w(\ln |z| + i \arg(z))}$



a) Verdadero: $r = \sqrt{(-1)^2 + 0^2} = 1$; $s = \sqrt{(1)^2 + (-1)^2} = \sqrt{2}$

$\sqrt[1]{i-1} = [i-1]^{1/2} = r^{1/2} e^{\frac{1}{2} i \text{Arg}(i-1)} = \frac{1}{\sqrt{2}} e^{\frac{1}{2} i \frac{3\pi}{4}} = \frac{1}{\sqrt{2}} e^{\frac{3\pi i}{8}}$

$\sqrt[1]{1-i} = [1-i]^{1/2} = s^{1/2} e^{\frac{1}{2} i \text{Arg}(1-i)} = \frac{1}{\sqrt{2}} e^{\frac{1}{2} i \frac{-\pi}{4}} = \frac{1}{\sqrt{2}} e^{-\frac{\pi i}{8}}$



$i(\sqrt[1]{1-i}) = i \frac{1}{\sqrt{2}} e^{-\frac{\pi i}{8}} = e^{\frac{i\pi}{2}} \frac{1}{\sqrt{2}} e^{-\frac{\pi i}{8}} = \frac{1}{\sqrt{2}} e^{\frac{\pi i}{2} - \frac{\pi i}{8}} = \frac{1}{\sqrt{2}} e^{\frac{4\pi i - \pi i}{8}} = \frac{1}{\sqrt{2}} e^{\frac{3\pi i}{8}}$