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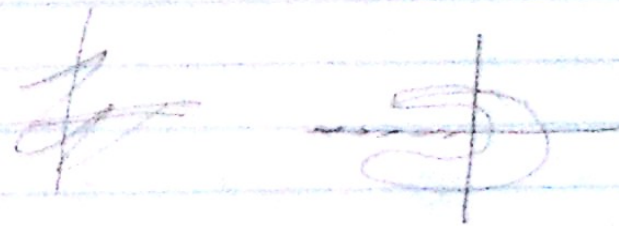
הצגה:

G $\mathbb{R}$ $\mathbb{C}$ $\mathbb{R}$ $\mathbb{C}$
 $\mathbb{R} \rightarrow \mathbb{C}$ $0 \neq e$ $e \in \mathbb{R}$ $e \in \mathbb{C}$
 $1 \in \mathbb{R}$ $2 \in \mathbb{C}$ $5 \in \mathbb{C}$ $1 \in \mathbb{C}$

$z = e^{i\theta}$
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הצגה:

$\log(z) = \ln|z| + i \operatorname{Arg}(z)$

$\mathbb{C} \setminus (-\infty, 0]$ $\mathbb{R}$

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$\log(i) = \ln|i| + i \operatorname{Arg}(i) = \frac{\pi}{2} i$

$$\sqrt{z} = e^{\frac{1}{2} \text{Log}(z)}$$

($\ll f^2(z) = z$)

$$1 = e^{(1+i)\frac{\pi}{2}} = e^{(1+i)\frac{\pi}{2}} = e^{-\frac{\pi}{2} + \frac{\pi}{2}i} = ie^{-\frac{\pi}{2}}$$

תוצאה: הוכחה / הסבר

$$g_2(t) = 1 \left(\frac{T}{2} + 2\pi k \right)$$

$$\arg(-i) = i(-\frac{\pi}{2} + 2\pi k)$$

$$\log(z^2) = \log(r^2 e^{i2\theta}) = 2 \ln r + i(2\theta + 2\pi k)$$

$$\partial \log t : \partial \log(re^{i\theta}) = \partial \ln r + 2i(\theta + 2\pi k) =$$

$$\log z^a + a \log z$$

הוכחה: (1) $\text{Log } e^z = z$ 148

(2) $\log e^z = z$ 15

(3) $e^{\log z} = z$ 16

(4) $\text{Log}(z_1 \cdot z_2) = \text{Log } z_1 + \text{Log } z_2$ 15

(5) $\text{Log}(\frac{1}{z}) = -\text{Log } z$ 16

הוכחה: (1) $z = 2\pi i$ $\log e^z = \log 1 = 0$

(2) $\log e^z = z$, כל z , $\log e^z = z$, כל z , $\log e^z = z$

הוכחה: (3) $z_1 = z_2 = e^{i \frac{3}{4} \pi}$ 15

(4) $\log z_1 \cdot \log z_2 = 2 \log e^{i \frac{3}{4} \pi} = 2 i \frac{3}{4} \pi = \frac{3}{2} \pi i$ 15

$\log(z_1 \cdot z_2) = \log(-i) = -\frac{\pi}{2} i$: 15

(5) $z = re^{i\theta}$, $\theta \in (-\pi, \pi)$ 16

$\log z = \ln |z| + i\theta$

$\log \frac{1}{z} = -\ln |z| + i \text{Arg}(\frac{1}{z}) = -\ln |z| + i \text{Arg}(\frac{1}{z} e^{-i\theta}) = -\ln |z| - i\theta = -\log z$ $\theta \in (-\pi, \pi)$

$f(t) = \frac{1}{2} e^{t/2}$
 $h(t) = 1$
 $z = e^{t/2}$

$h'(t) = \frac{1}{2} e^{t/2}$
 $h(t) = 1$
 $z = e^{t/2}$

$$h'(t) = \frac{1}{2} e^{t/2} + z \cdot e^{-t/2} \cdot \frac{1}{2} = 0$$

$h(t) = 1$
 $z = e^{t/2}$
 $h = 1$
 $z = e^{t/2}$

Ans