Widać ekran?

Słychać?

$$\underbrace{\sum_{k=1}^{n-1} \varepsilon^k = \frac{\varepsilon\left(1-\varepsilon^{n-1}\right)}{1-\varepsilon}}_{\text{suma wyrazów ciągu geometrycznego}}$$

$$\varepsilon = \cos \phi + i \sin \phi$$

liczba rzeczywista

$$\underbrace{\sum_{k=1}^{n-1}\left(\cos(\phi)+i\sin(\phi)\right)^{k}}_{\left(e^{i\phi}\right)^{k}=e^{ik\phi}=\cos(k\phi)+i\sin(k\phi)} = \ldots$$

$$\ldots = \sum_{k=1}^{n-1}\left(\cos(k\phi)+i\sin(k\phi)\right) =$$

$$= \sum_{k=1}^{n-1}\cos(k\phi) + \sum_{k=1}^{n-1} i\sin(k\phi) =$$

$$= \sum_{k=1}^{n-1} \cos(\phi) + i \sum_{k=1}^{n-1} \sin(\phi) =$$

$$= \frac{\epsilon\left(1 - \epsilon^{n-1}\right)}{1 - \epsilon}$$

$$\cos(\phi) + i\sin(\phi)$$

$$\sum_{j=1}^{n-1} \epsilon_k^j \qquad k = 0 \ldots n-1$$

$$\left(e^{i \cdot \frac{2\pi}{n} k}\right)^n = e^{i \cdot \frac{2\pi}{\cancel{n}} k \cdot \cancel{n}} =$$

$$= e^{i \cdot 2\pi k} = \overbrace{\cos(2\pi k)}^{1} + i \underbrace{\sin(2\pi k)}_{0}$$

$$\sum_{j=1}^{n-1} \epsilon_k^j = \sum_{j=1}^{n-1} \left(e^{i \frac{2\pi}{n} k} \right)^j =$$

$$= \frac{\epsilon_k (1 - \epsilon_k^{n-1})}{1 - \epsilon_k} =$$

$$= \frac{\epsilon_k - (\epsilon_k^n)}{1 - \epsilon_k} = \ldots$$

$$\sum_{k=1}^{n-1} (k+1)\,\epsilon^{k}$$

$$\frac{d}{d\epsilon}\,\epsilon^{k+1} = (k+1)\,\epsilon^{k}$$

$$\sum_{k=1}^{n-1} \frac{d}{d\epsilon}\,\epsilon^{k+1} = \sum_{k=1}^{n-1} (k+1)\,\epsilon^{k}$$

$$\frac{d}{d\epsilon} \sum_{k=1}^{n-1} \epsilon^{k+1} = \sum_{k=1}^{n-1} (k+1)\,\epsilon^{k}$$

$$\frac{d}{d\epsilon}\sum_{k=1}^{n-1} \epsilon^{\underbrace{k+1}} n =$$

$$u = k+1$$

$$k = u-1$$

$$= \frac{d}{d\epsilon}\underbrace{\left(\sum_{u=2}^{n} \epsilon^{u} \right)} = \dots$$

i^i – czy ma sens

$$e^{i\frac{\pi}{2}} = \underbrace{\cos\left(\frac{\pi}{2}\right)}_{0} + i\,\underbrace{\sin\left(\frac{\pi}{2}\right)}_{1} =$$

$$= i$$

$$i^i$$

Czy są pytania do zestawu III?

Kolokwium sie

odbędzie

za tydzień :(

$$\dots = \frac{e^{i\frac{2\pi}{m}\cdot k} - \left(e^{i\frac{2\pi}{m}\cdot k}\right)^{m}}{1 - e^{i\frac{2\pi}{m}k}} =$$

$$= \dots = -\underline{1}$$