

A mintavétel hatása az időtartományban (Mathcad) :

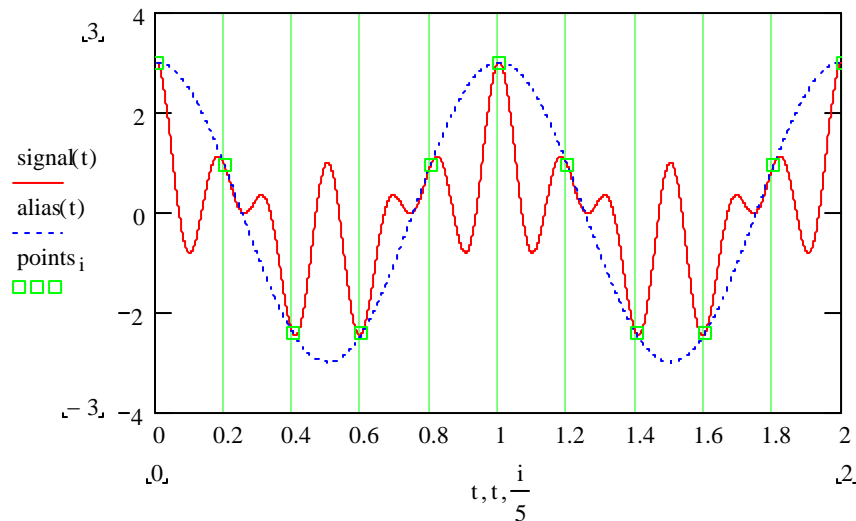
1:

$$t := 0..2 \quad \text{sample_rate} := 5 \quad \Delta t := \frac{1}{\text{sample_rate}} \quad i := 0..10$$

$$\text{signal}(t) := \cos(2\pi \cdot t) + \cos(8\pi \cdot t) + \cos(12\pi \cdot t)$$

$$\text{points}_i := \text{signal}(i \cdot \Delta t) \quad \text{alias}(t) := 3 \cdot \cos(2\pi \cdot t)$$

mert $\cos(-x) = \cos(x)$



Megjegyzés:

$$2\pi \cdot (i/5),$$

$$8\pi \cdot (i/5) = 2\pi i - 2\pi \cdot (i/5),$$

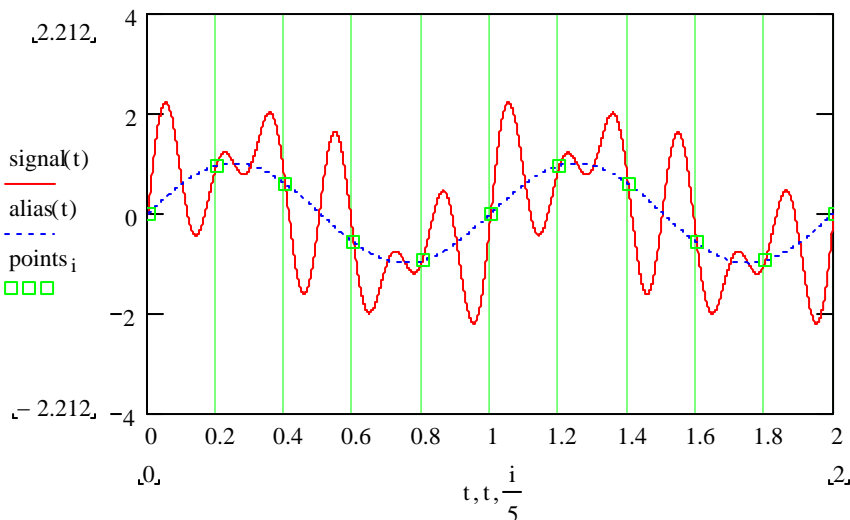
$$12\pi \cdot (i/5) = 2\pi i + 2\pi \cdot (i/5)$$

2:

$$\text{signal}(t) := \sin(2\pi \cdot t) + \sin(8\pi \cdot t) + \sin(12\pi \cdot t)$$

$$\text{points}_i := \text{signal}(i \cdot \Delta t) \quad \text{alias}(t) := 1 \cdot \sin(2\pi \cdot t)$$

mert $\sin(-x) = -\sin(x)$

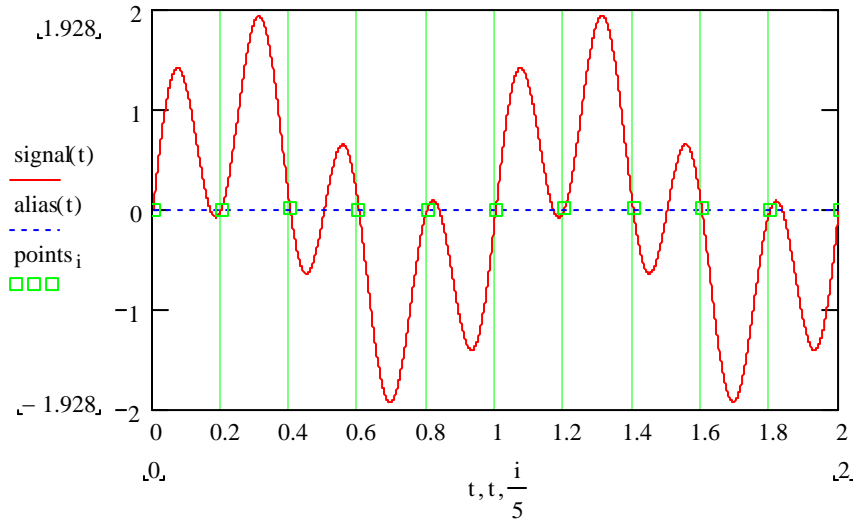


3: Nyquist voodoo:

$$\text{signal}(t) := \sin(2 \cdot \pi \cdot t) + \sin(8 \cdot \pi \cdot t)$$

$$\text{points}_i := \text{signal}(i \cdot \Delta t) \quad \text{alias}(t) := 0$$

mert $\sin(-x) = -\sin(x)$



Megjegyzés:
csak két komponens

$2\pi \cdot (i/5)$,

$8\pi \cdot (i/5) = 2\pi i - \underline{2\pi \cdot (i/5)}$

4:

$$\text{signal}(t) := \sin(2 \cdot \pi \cdot t) + \cos(8 \cdot \pi \cdot t)$$

$$\text{points}_i := \text{signal}(i \cdot \Delta t) \quad \text{alias}(t) := \sin(2 \cdot \pi \cdot t) + \cos(2 \cdot \pi \cdot t) = \sqrt{2} \cdot \sin(2\pi t + 0.785)$$

