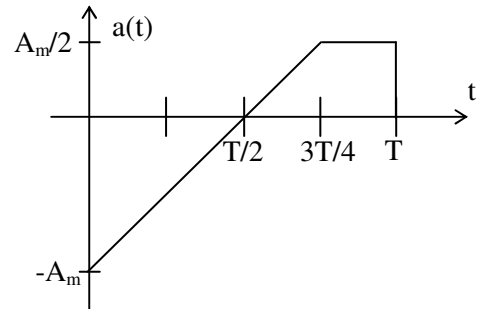
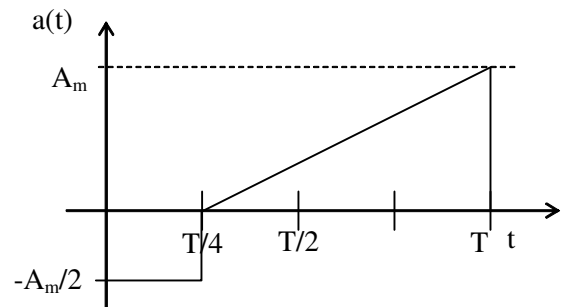


# 1. Domača naloga iz Osnov elektrotehnike II

1. Izračunajte (po definiciji) aritmetično in efektivno srednjo vrednost signala na sliki 1.

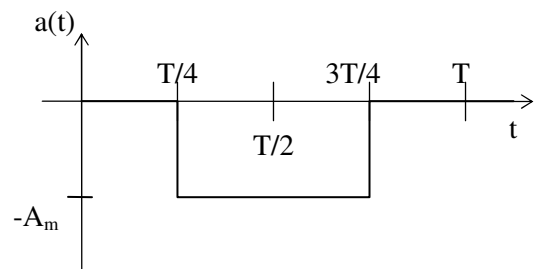


2. Izračunajte (po definiciji) aritmetično in efektivno srednjo vrednost signala na sliki 1.

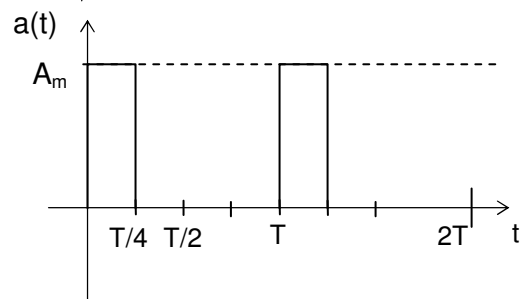


Slika 1

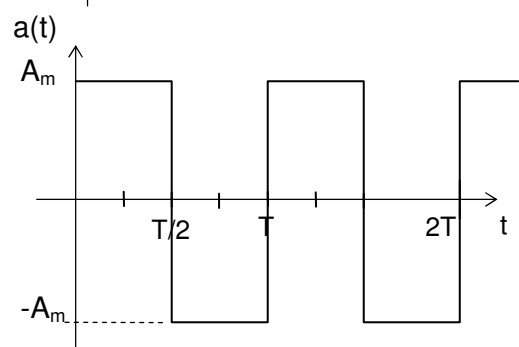
3. Razvijte signal na sliki v Fourierjevo vrsto.



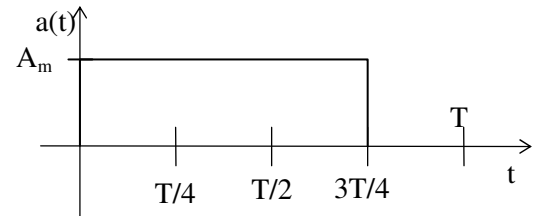
4. Razvijte signal na sliki v Fourierjevo vrsto.



5. Razvijte signal na sliki v Fourierjevo vrsto.



6. Razvijte signal na sliki v Fourierjevo vrsto.



Rešitve:

$$1. \quad A_{sr} = -\frac{A_m}{16} \quad A = \frac{A_m}{2}$$

$$2. \quad A_{sr} = \frac{A_m}{4} \quad A = \frac{A_m \cdot \sqrt{5}}{4}$$

$$3. \quad A_0 = -A_m$$

$$B_n = \frac{-Am}{n \cdot \pi} \left( \sin\left(n \cdot \frac{3\pi}{2}\right) - \sin\left(n \cdot \frac{\pi}{2}\right) \right)$$

$$a(t) = -\frac{Am}{2} + \frac{2A_m}{\pi} \left( \cos(\omega t) - \frac{1}{3} \cos(3\omega t) + \frac{1}{5} \cos(5\omega t) - \dots \right)$$

4.

$$A_0 = \frac{A_m}{2}$$

$$A_n = \frac{A_m}{n \cdot \pi} \left( 1 - \cos\left(n \cdot \frac{\pi}{2}\right) \right)$$

$$B_n = \frac{Am}{n \cdot \pi} \cdot \sin\left(n \cdot \frac{\pi}{2}\right)$$

$$a(t) = \frac{Am}{4} + \frac{A_m}{\pi} \left( \sin(\omega t) + \sin(2\omega t) + \frac{1}{3} \sin(3\omega t) + \frac{1}{5} \sin(5\omega t) + \dots \right) + \frac{Am}{\pi} \left( \cos(\omega t) - \frac{1}{3} \cos(3\omega t) + \frac{1}{5} \cos(5\omega t) \right)$$

$$5. \quad A_n = \frac{2A_m}{n \cdot \pi} (1 - \cos(n\pi))$$

$$a(t) = \frac{4A_m}{\pi} \left( \sin(\omega t) + \frac{1}{3} \sin(3\omega t) + \frac{1}{5} \sin(5\omega t) + \dots \right)$$

$$A_n = \frac{A_m}{n \cdot \pi} \left( 1 - \cos\left(n \cdot \frac{3\pi}{2}\right) \right)$$

$$B_n = \frac{A_m}{n \cdot \pi} \left( \sin\left(n \cdot \frac{3\pi}{2}\right) \right)$$

6.

$$a(t) = \frac{3}{4} A_m + \frac{A_m}{\pi} \left( \sin(\omega t) + \sin(2\omega t) + \frac{1}{3} \sin(3\omega t) + \frac{1}{5} \sin(5\omega t) + \dots \right) + \frac{A_m}{\pi} \left( -\cos(\omega t) + \frac{1}{3} \cos(3\omega t) - \frac{1}{5} \cos(5\omega t) + \dots \right)$$