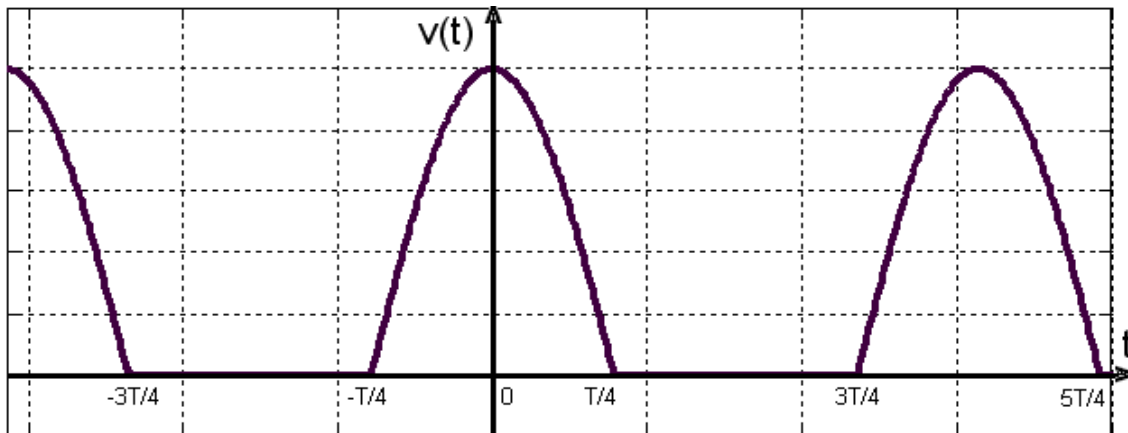


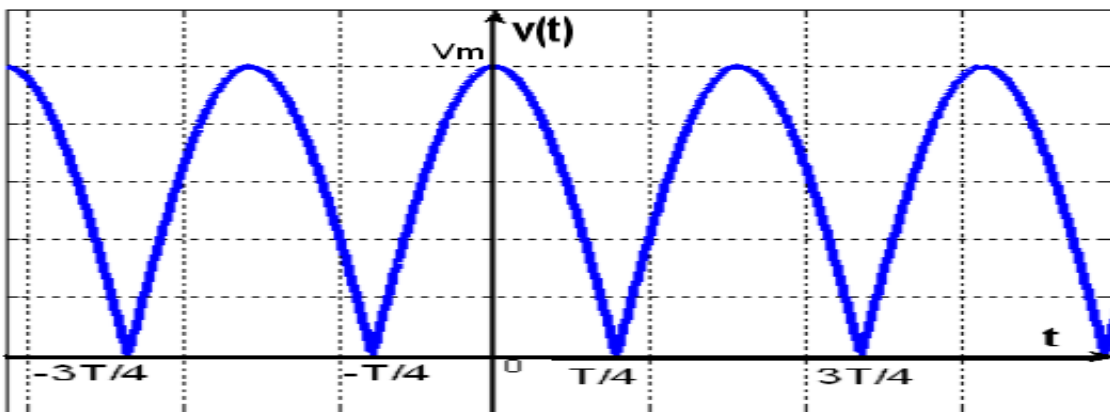
Home work

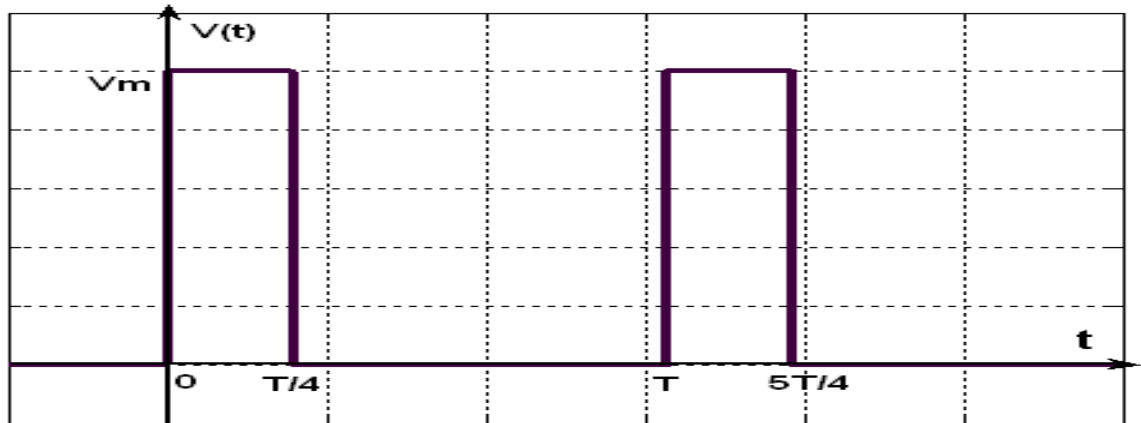
For the following signals find:

$$v(t) = V_m \cos \omega_0 t, \quad \omega_0 = 2\pi/T, \quad (-T/4 < t < T/4)$$



$$v(t) = V_m |\cos \omega_0 t|, \quad \omega_0 = 2\pi/T$$

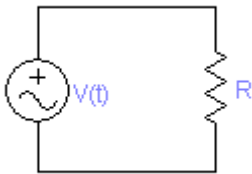




$$T=20[\text{msec}], V_m=100[\text{v}], \omega_0=2\pi/T=100\pi [\text{rad/sec}]$$

- The RMS value.
- Fourier series.
- DC component and 5 harmonics.

The voltage $v(t)$ is applied to the resistor $R=1\Omega$ as shown on the figure below.



Find:

- An average power dissipated on the resistor R .
- An average power dissipated on the resistor R approximated by the five first harmonics.
- An error between average power, found at the paragraph d, and approximated average power, found at the paragraph e.
- (Optional) Check the results by the simulation program.