

EECS 360
Homework #8

- 1. Section 4.5 Participation Activities**
 - 4.5.1: Fourier series analysis for RC circuit with triangle wave input.
 - 4.5.3: Fourier analysis of RC circuit, half-wave rectified sine input.
- 2. Section 4.6 Participation Activities**
 - 4.6.1: Average power of sinusoidal signals.
 - 4.6.2: Average power of sum and product of sinusoids.
 - 4.6.3: Parseval's theorem for Fourier series.
- 3. For $x(t) = 8\cos(300\pi t) - 3\sin(600\pi t)$ find P_x using the Parseval's theorem using the following Fourier series representations**
 - a. sinc/cosine Fourier series representation of $x(t)$, a_0 , a_n and b_n
 - b. amplitude/phase Fourier series representation of $x(t)$, c_0 , c_n , ϕ_n
 - c. complex exponential Fourier series representation of $x(t)$, x_n
- 4. Section 4.6 Challenge Activity**
 - 4.6.1: Parseval's theorem for periodic waveforms.
- 5. Exercise 4.6.2**
- 6. Exercise 4.6.3**
- 7. Section 4.7 Participation Activities**
 - 4.7.1: Fourier transform and sinc
 - 4.7.2: Rectangular pulse frequency spectrum.
 - 4.7.3: Calculating Fourier transforms of constants and exponentials.
- 8. Let $x(t) = \frac{5}{3} * t * \text{rect}(\frac{t-1.5}{3})$. Plot $x(t)$ and find the Fourier Transform of $x(t)$.**
- 9. Find the Fourier Transform of $10\text{tri}(\frac{t}{6})$**
- 10. Exercise 4.7.3**
- 11. Exercise 4.7.6**