

Problems Day 43, R 4/11/2024

Topic 21: Fourier Series (day 1)

Jeremy Orloff

Problem 1. Show $\cos\left(\frac{n\pi}{3}t\right)$, $n = 1, 2, 3, \dots$ all have a common period.

Problem 2.

(a) Write out the sequence $\cos(n\pi)$, $n = 0, 1, 2, \dots$. Write it out in a simple way in terms of n .

(b) Same question for $\sin(n\pi)$.

(c) Write out $\sin\left(\frac{n\pi}{2}\right)$, $n = 0, 1, 2, \dots$ (There isn't a simpler way to express this.)

Problem 3. Compute the Fourier series of the standard, odd, period 2π square wave $\text{sq}(t)$. Do this by computing the integrals for its Fourier coefficients.

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