Problems Day 49, M 4/22/2024

Topic 24: $P(D)x$ = periodic

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Problem 1. Solve $\ddot{x} + 9x = \text{sq}(t)$

– Watch for resonance.

– Use the notation $\phi(n)$ or ϕ_n in the SRF.

Problem 2. Solve $\ddot{x} + 16x = \text{sq}(t)$. Is there any resonance?

Problem 3. Solve $\ddot{x} + 0.01\dot{x} + 9x = \displaystyle\sum_{n=1}^{\infty} \frac{\cos(nt)}{n^2}$.

Are there any near-resonant terms?

Problem 4. Solve $\ddot{x} + 10x = \text{sq}(t)$.

Are there any near-resonant terms?

ES.1803 Differential Equations

Spring 2024