EE206 Assignment 8 *

Due 3^{rd} Dec.

1. Determine whether the given function is even, odd, or neither.

   (a) $f(x) = x\cos x$

   (b) $f(x) = x^4 - 4x$

   (c) $f(x) = e^x - e^{-x}$

   (d) $f(x) = |x^5|$

   (e) $f(x) = \begin{cases} x+5, & -2 < x \leq 0 \\ -x+5, & 0 \leq x < 2 \end{cases}$

2. Expand the given function in an appropriate cosine or sine series.

   (a) $f(x) = x, \quad -\pi < x < \pi$

   (b) $f(x) = x|x|, \quad -1 < x < 1$

   (c)
   $$f(x) = \begin{cases} 1, & -2 \leq x \leq -1 \\ 0, & -1 \leq x \leq 1 \\ 1, & 1 < x < 2 \end{cases}$$

3. Find the half-range cosine and sine expansions of the given function, and graph each case. $f(x) = x(2-x), \quad 0 < x < 2$

4. Find the complex Fourier series of f on the given interval.

   (a)
   $$f(x) = \begin{cases} 0, & -2 < x < 0 \\ 1, & 0 < x < 2 \end{cases}$$

   (b)
   $$f(x) = \begin{cases} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{cases}$$

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