Homework 02

(due day in two weeks, 4/7)

Problem 1: (40 points)

A function $f(x) = e^{-a|x|},\ a > 0$, please find

(1) Fourier integral of *f(x)*

(2) Calculate $\int_0^{\infty} \frac{\cos(2x)}{x^2 + 4} dx$

Answer

Problem 2: (30 points)

If $f(x)=\begin{cases} e^{-2x}, x>0 \\ 0, \quad x<0 \end{cases}$., please find *f(x)'s* Fourier integral.

Answer

Problem 3: (30 points)

Please find the 4th Maclaurin series of $\sqrt{x+1}$ and find its value at $\sqrt{0.9}$. Afterward, please show the approximation error in this case.

Answer