

MATH4564 - Homework No3 - Fall 03 - Konaté

Notice: Show your work. A right answer with a bad reasoning will be considered as wrong. Use a computer and any dialect to perform your graphing.

Reminder:

$$\begin{aligned}\sin^2(t) &= \frac{1}{2}(1 - \cos(2t)); & \cos^2(t) &= \frac{1}{2}(1 + \cos(2t)); \\ \sinh(at) &= \frac{1}{2}(e^{at} - e^{-at}); & \cosh(at) &= \frac{1}{2}(e^{at} + e^{-at}).\end{aligned}$$

PROBLEM

Find the Laplace Transform of the function:

$$f(t) = e^{1-2t}; \quad f(t) = \sin^2(t)$$

$$f(t) = \cos^2(t); \quad f(t) = (t+1)^2$$

$$f(t) = \cos(3t) + \sin(5t);$$

$$f(t) = \begin{cases} t & \text{for } 0 < t < 5 \\ t + \sin(t-5) & \text{for } 5 < t < +\infty \end{cases}$$

$$g(t) = \begin{cases} t-2 & \text{for } 0 < t < \pi \\ \pi^2 & \text{for } \pi < t < +\infty \end{cases}$$

$$f(t) = \begin{cases} 0 & \text{for } 0 < t < 5 \\ t-1 & \text{for } 5 < t < 8 \\ 0 & \text{for } 8 < t < +\infty \end{cases}$$

$$f(t) = \begin{cases} 2 & \text{for } 0 < t < 2 \\ t & \text{for } 2 < t < 5 \\ 3 & \text{for } 5 < t < +\infty \end{cases}$$
