Math 252

Assignment 4

Covers: Sections 7.1-7.5

Due: Tues April 7 at 8:30am

INSTRUCTIONS:

This assignment will be marked for completion.

Solutions will be posted on the course website 24 hours after the deadline.

You may not copy the work of another person or AI.

Submit jpg or pdf files to the D2L Dropbox.

1. Solve using the Laplace transform:
$y'' - 10y' + 24y = 2e^{4t}, y(0) = 8, y'(0) = -3$

2. Solve using the Laplace transform:
$y'' - 3y' = 10e^t \sin t, y(0) = 0, y'(0) = 0$

3. a) Solve using the Laplace transform:
$y' + 8y = f(t), y(0) = 0$, where $f(t) = \begin{cases} 0, & 0 \le t < 3 \\ 9, & t \ge 3 \end{cases}$

b) Find $y(1)$
c) Find $y(4)$

4. Solve for $f(t)$:

$f(t) = t^2 - \int\limits_0^t f(\theta)e^{t-\theta}d\theta$