EGR 272 Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Circuit Theory II

File: N272M3A

**MATLAB Assignment #3 – Laplace Transforms**

General notes for all MATLAB programs:

* Write programs (.m files) – do not use the Command Window.
* Begin all programs with a block of comments including name, course number, assignment number, problem, and a brief description of the problem.
* Include comments throughout each program. Use comments to indicate units for variables when appropriate.
* All required MATLAB outputs should be nicely formatted.

**Reference:** Refer to the following lectures on the course website

***MATLAB Lecture – Laplace Transforms***

***MATLAB Lecture – Inverse Laplace Transforms***

***MATLAT Lecture – Analyzing Circuits using Laplace Transforms***

1. **Laplace Transforms**:

A) **Find the Laplace transforms of the following functions by hand. Show all work.**



1. **MATLAB Analysis:**

Write a single MATLAB program to find the Laplace transforms of the functions listed in part 1A.

1. **Discussion:**

Do the results of parts 1A and 1B agree? Discuss any differences.

2. **Inverse Laplace Transforms**:

A) **Find the inverse Laplace transforms of the following functions by hand. Show all work.**



1. **MATLAB Analysis:**

Write a single MATLAB program to find the inverse Laplace transforms of the functions listed in part 2A.

1. **Discussion:**

Do the results of parts 2A and 2B agree? Discuss any differences.

3. **Circuit Analysis using Laplace Transforms**:

A) **Analyze textbook problem 13.14 by hand (this is a homework problem). Show all work.**

1. **MATLAB Analysis:**

Write a single MATLAB program to analyze problem 13.14. Do this by:

* Solving two mesh equations (in the s-domain) symbolically
* Using inverse Laplace transforms for find the two required currents.
* See the similar example in the MATLAB lecture notes

1. **Discussion:**

Do the results of parts 3A and 3B agree? Discuss any differences.