

# Math 135 Ordinary Differential Equations

Homework 3

April 16, 2022

## Laplace Transforms:

1. Show that the following functions are of exponential order

- $f(t) = t^3 \sin(t)$
- $g(t) = t^2 e^t$

2. Let  $f(t)$  be a piecewise continuous on  $[0, \infty)$  and of exponential order, prove that

$$\lim_{s \rightarrow \infty} \mathcal{L}(s) = 0.$$

3. Section 48: Problems 2.
4. Section 48: Problems 4c.
5. Section 48: Problems 5c.
6. Section 49: Problems 2.
7. Section 49: Problems 4.
8. Section 50: Problems 3a.