

The University of Zambia
Department of Mathematics and Statistics
Academic Year 2018/19
Mat 3110 Quiz 1

Duration : 1 hour

March 17, 2019.

1. Solve the following initial value problem. (10)

$$y' + 5y = \begin{cases} 1 & : 0 \leq t < 1 \\ 0 & : t \geq 1. \end{cases}, \quad y(0) = 0.$$

2. Find the Laplace transform of (10)

$$f(t) = \cosh^2 t.$$

3. **Find** and **sketch** the inverse Laplace transform of (10)

$$F(s) = \frac{e^{-2s} - e^{-3s}}{s^2}$$

4. Find the inverse Laplace transform of (10)

$$F(s) = \frac{1}{s^4 - 1}$$