MT240: Complex Variables and Transforms

Worksheet 15

Fri, May 17

Spring 2019

Roll# Student 1: Roll# Evaluator 1:

Roll# Student 2: Roll# Evaluator 2:

Problem 1

Find the Laplace transforms of the following functions using Laplace transform table and properties. Assume that the functions are causal i.e. $f(t) = 0$ for $t < 0$. Also find and plot the region of convergence in the s-plane.

(a) $f(t) = 3u(t-2)$

(b) $f(t) = 3t + 12$

(c) $f(t) = 2\cos 2t - 8e^{-2t}$

(d) $f(t) = 2 - e^{4t}\sin \pi t$

(e) $f(t) = \sin^2 t$

(f) $e^{-t}(t^5 + 1)$

Problem 2

Sketch the graph of the periodic function $f(t) = |\sin t|$ and find its Laplace transform. Also find its region of convergence.