EE 150L
Signals and Systems Lab

Lab6 Laplace Transform

Date Performed:

Class Id:

Name and Student ID:

1. Please briefly describe the difference and relationship between Laplace transform and Fourier transform.

2. $y''(t)+3y'(t)+2\mathrm{y}(\mathrm{t})=2f'(t)+6f(t), f(t)=u(t), \mathrm{y}(0\_)=2, y'(0\_)=1$
   a) Find out the transfer function H(s).
   b) What is the relationship between H(s) and h(t).
   c) Find out the zero state response with H(s).

   提示:
   - 系统的传递函数 H(s) 是指在零初始条件下系统响应（即输出）与激励（即输入）之比。
     即当$\mathrm{y}(0_)=0, y'(0_)=0$时:
     $$\mathrm{H(s)}=\frac{Y(s)}{F(s)}$$
   - 要从微分方程获得系统传递函数，需对微分方程两边进行拉普拉斯变换，同时利用拉普拉斯变换的时域微分性质。