NAME : PRATHAPANI SATWIKA

REG.NO. : 20BCD7160

EXPERIMENT NO. : 7 Solving ODE Using Laplace

Transform

1.

```
1 -    clc
2 -    clear all
3 -    syms f1(t) f2(t) s a
4 -    f1(t)= 1-t+2*(t^2);
5 -    f2(t)= 4*exp(-3*t)-10*sin(2*t);
6 -    fprintf('20BCD7160 Prathapani Satwika')
7 -    F1 = laplace(f1,t,s)
8 -    F2 = laplace(f2,t,s)
```

Command Window

```
20BCD7160 Prathapani Satwika
F1 =


(s - 1)/s^2 + 4/s^3



F2 =


4/(s + 3) - 20/(s^2 + 4)

fx >> |
```

2.

```matlab
1 -    clc
2 -    clear all
3 -    syms t s Y y(t) Dy(t)
4 -    Df=diff(y(t),t,1);
5 -    DDf=diff(y(t),t,2);
6 -    Eqn=DDf+2*Df==8*t;
7 -    LEQN=laplace(Eqn,t,s);
8 -    LT_Y=subs(LEQN,laplace(y,t,s),Y);
9 -    LT_Y=subs(LT_Y, y(0), 1);
10 -   LT_Y=subs(LT_Y, subs(diff(y(t), t), t, 0), 0);
11 -   ys=solve(LT_Y,Y);
12 -   fprintf('20BCD7160 Prathapani Satwika');
13 -   y=ilaplace(ys,s,t)
```

Command Window

```
20BCD7160 Prathapani Satwika
y =

2*t^2 - exp(-2*t) - 2*t + 2

fx >>
```

3.

```
1 -    clc
2 -    clear all
3 -    syms  y(t) t s Y
4 -    df=diff(y(t),t,1);
5 -    ddf=diff(y(t),t,2);
6 -    e = ddf+16*df==16*sin(2*t);
7 -    LQ = laplace(e,t,s);
8 -    LT =subs(LQ,laplace(y,t,s),Y);
9 -    LT=subs(LT,y(0),1);
10 -   LT=subs(LT, subs(diff(y(t),t),t,0),0);
11 -   yy=solve(LT,Y);
12 -   fprintf('20BCD7160 Prathapani Satwika \n');
13 -   y = ilaplace(yy,s,t)
```

Command Window

```
20BCD7160 Prathapani Satwika


y =


3/2 - exp(-16*t)/130 - (4*sin(2*t))/65 - (32*cos(2*t))/65


fx >> |
```