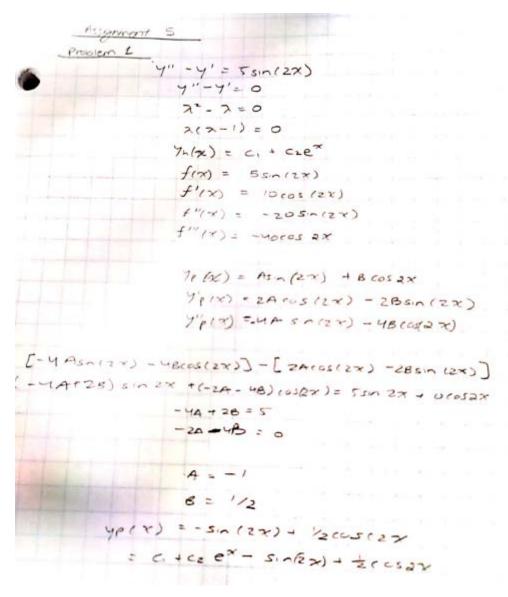
Engineering Measurements Assignment 5

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```
%%Arjun Posarajah
  %Question 4
  syms x a s
\neg for x=0==1
       PartA=exp(-s^2);
       FTA=fourier(PartA)
      PartB=dirac(x-a);
       FTB=fourier(PartB)
       PartC=5*dirac(x-a);
       FTC=fourier(PartC)
       PartD=heaviside(x+a)-heaviside(x-a)
       FTD=fourier(PartD);
       PartE=diff(dirac(x-a));
       FTE=fourier(PartE)
  end
FTA =
pi^{(1/2)} * exp(-w^{2/4})
FTB =
1
FTC =
5
PartD =
heaviside(a) - heaviside(-a)
FTE =
w*1i
```

```
>> Untitled
                                LPF =
                                87178291200/s^15
                                LPG =
%%Arjun Posarajah 104980541
                                (10*s)/(s^2 + 25)^2
%Question5
syms y t
                                LPH =
f1 = t^14;
                                (10*s)/(s^2 - 25)^2
LPF=laplace(f1)
f2=t*sin(5*t);
LPG=laplace(f2)
                                LPI =
f3=t*sinh(5*t);
LPH=laplace(f3)
f4=diff(y,t);
                                LPJ =
LPI=laplace(f4)
f5=diff(y,t,2);
LPJ=laplace(f5)
                                >> LPF
%%Arjun Posarajah 104980541
%Question 6
syms s X x(t) Dx(t)
DE=diff(x,t,2)-4*diff(x,t)-5*x==1+exp(-t);
trans1=laplace(DE)
trans2=subs(trans1, laplace(x(t), t, s), X)
trans3=subs(trans2,x(0),0)
trans4=subs(trans3, subs(diff(x(t),t),t,0),0)
X=solve(trans4,X)
x=laplace(X)
```

```
trans1 =

4*x(0) - 4*s*laplace(x(t), t, s) - s*x(0) + s^2*laplace(x(t), t, s) - subs(diff(x(t), t), t, 0) - 5*laplace(x(t), t, s) == 1/(s + 1) + 1/s

trans2 =

4*x(0) - 5*x - 4*x*s - s*x(0) - subs(diff(x(t), t), t, 0) + X*s^2 == 1/(s + 1) + 1/s

trans3 =

x*s^2 - 4*X*s - 5*X - subs(diff(x(t), t), t, 0) == 1/(s + 1) + 1/s

trans4 =

X*s^2 - 4*X*s - 5*X == 1/(s + 1) + 1/s

x =

-(1/(s + 1) + 1/s)/(- s^2 + 4*s + 5)

x =

(11*exp(-5*z)*(log(-5*z) - log(5) - log(z) + expint(-5*z)))/180 + (5*exp(z)*expint(z))/36 - laplace(1/s, s, z)/5 - laplace(1/(s + 1)^2, s, z)/6
```

Assignments

Problem 8

$$7 = \frac{mc}{h R_3} = \frac{pV_{*}c}{h R_3} = \frac{p(\frac{4\pi r^2}{3})_c}{h (4\pi r^2)} = \frac{fcr}{3h} = \frac{8900 \times 7447 \times r}{3(100)}$$

$$= \frac{10}{13172 fn (0.1)}$$

$$= \frac{13172 fn (0.1)}{13172 fn (0.1)} = \frac{13172 fn (0.1)}{13172 fn (0.1)} = 0.33 mm$$

$$= \frac{1}{13172 fn (0.1)} = 0.033 mm$$

$$= \frac{1}{13172 fn (0.1)} = 0.00330 mm$$