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Batch: B2
Tutorial 1

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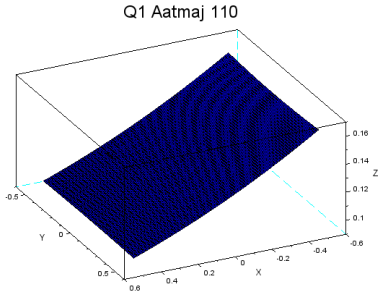
Question 1 exp(-2*t).*sin(t).*cos(t); 0<t<10

```
clear; clc;
t=0:0.01:10; // function is defined in this range//
f=exp(-2*t).*sin(t).*cos(t);
a=1; //variable chosen to define the loop for sigma //
for sigma=-0.5:0.01:0.5, //range for sigma is required to plot the graph, //
b=1; //variable chosen to define the loop for omega //
for omega =-0.5:0.01:0.5,
rp=f.*exp(-sigma*t).*cos(omega*t); //real part of integrand
irp(a,b)=inttrap(t,rp); //command to find integration of real part of

ip=f.*exp(-sigma*t).*sin(omega*t); //imaginary part of integrand//
iip(a,b)=inttrap (t,ip); //command to find integration of imaginary part of

magnitude (a,b)=abs(irp(a,b)+%i*iip(a,b)); //evaluation of integral including real and

b=b+1; end;
a=a+1; end;
sigma=-0.5:0.01:0.5;
omega=-0.5:0.01:0.5;
plot3d(sigma,omega,magnitude) // plot3d is to be used to plot 3 variables
title('Q1','fontsize',5)
```



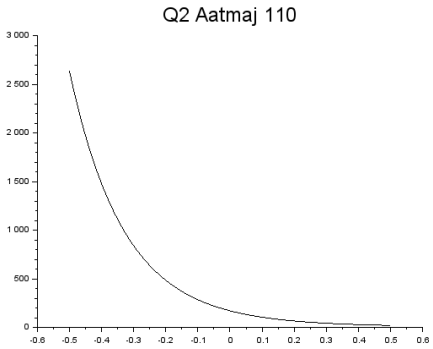
Question 2: (t+1)^2

```
clear; clc;
t=0:0.01:7; // function is defined in this range//
f=(t+1).*(t+1);
a=1; //variable chosen to define the loop for sigma //
for sigma=-0.5:0.01:0.5, //range for sigma is required to plot the graph, //
rp=f.*exp(-sigma*t); //real part of integrand
irp(a)=inttrap(t,rp); //command to find integration of real part of

magnitude (a)=abs(irp(a)); //evaluation of integral including real and
```

```
a=a+1; end;
sigma=-0.5:0.01:0.5;
plot2d(sigma,magnitude) // plot3d is to be used to plot 3 variables
title('Q2','fontsize',5)
```

OUTPUT-



Question 3: t.*sin(t)^2

```
clear; clc;
t=0:0.01:5; // function is defined in this range//
f=t.*sin(t).*sin(t);
b=1; //variable chosen to define the loop for omega //
for omega =-0.5:0.01:0.5,
rp=f.*cos(omega*t); //real part of integrand e^(-st) f(t)=e^(-(σ+j ω)t) f(t)//
irp(b)=inttrap(t,rp); //command to find integration of real part of integrand using trapezoidal rule//
ip=f.*sin(omega*t); //imaginary part of integrand//
iip(b)=inttrap (t,ip); //command to find integration of imaginary part of integrand using trapezoidal rule//
magnitude (b)=abs(irp(b)+%i*iip(b)); //evaluation of integral including real and imaginary part//
b=b+1; end;
omega=-0.5:0.01:0.5;
plot2d(omega,magnitude) // plot3d is to be used to plot 3 variables
title('Q3','fontsize',5)
```