```
clear all;
close all;
ar=input('Enter the real part of z = ');
ai=input('Enter the imaginary part of z = ');
a=ar+j*ai;
b=exp(a);
for i=1:1000000,
    syms f z;
    f=exp(z);
    T=taylor(f,i);
    zd=a;
    yd=subs(T,z,zd);
    error=abs((yd-b)/b);
    if error<=0.05
        n=i;
        break
    end
end
fprintf(1,'The number of necessary terms is: %f\n',n);
fprintf(1,'The percentage error is: %% %f\n',error*100);
```

```
clear all;
close all;
syms f z;
f=exp(z);
T=taylor(f,40);
id=0:0.01:10;
zd=id*(1+j);
yd=subs(T,z,zd);
xd=subs(f,z,zd);
plot(abs(zd),abs(yd))
xlabel(' The magnitude of z ');
ylabel(' The magnitude of the Taylor series expansion ');
figure
plot(abs(zd),abs(xd))
xlabel(' The magnitude of z ');
ylabel(' The magnitude of the function exp(z) ');
```

```
clear all;
close all;
syms f z;
f=exp(z^2);
T=taylor(f,160);
id=0:0.01:10;
zd=id*(1+j);
yd=subs(T,z,zd);
xd=subs(f,z,zd);
plot(abs(zd),abs(yd))
xlabel(' The magnitude of z ');
ylabel(' The magnitude of the Taylor series expansion ');
figure
plot(abs(zd),abs(xd))
xlabel(' The magnitude of z ');
ylabel(' The magnitude of the function exp( z ^2 ) ');
```

```
b = [10 6 -4 14];
a = [-8 0 16 6];
[r, p, k] = residue(b,a);
disp('for the first expression :');
fprintf(1,'The residues are : %f %f %f\n',r);
fprintf(1,'The poles are : %f %f %f\n',p);
fprintf(1,'The constant in the expansion is : %f\n',k);
b = [0 9 -34 29];
a = [1 -6 11 -6];
[r, p, k] = residue(b,a);
disp('for the second expression :');
fprintf(1,'The residues are : %f %f %f\n',r);
fprintf(1,'The poles are : %f %f %f\n',p);
```

```
syms f x
f=(sin(x)-1)/x^4;
T1=maple('series',f,'x=0',10);
a=char(T1);
disp(' for the first expression the laurent series expansion is :');
fprintf(1,'%s\n',a(8:end-5));
f=cot(x)/x^4;
T2=maple('series',f,'x=0',10);
b=char(T2);
disp('for the second expression the laurent series expansion is :');
fprintf(1,'%s\n',b(8:end-5));
```