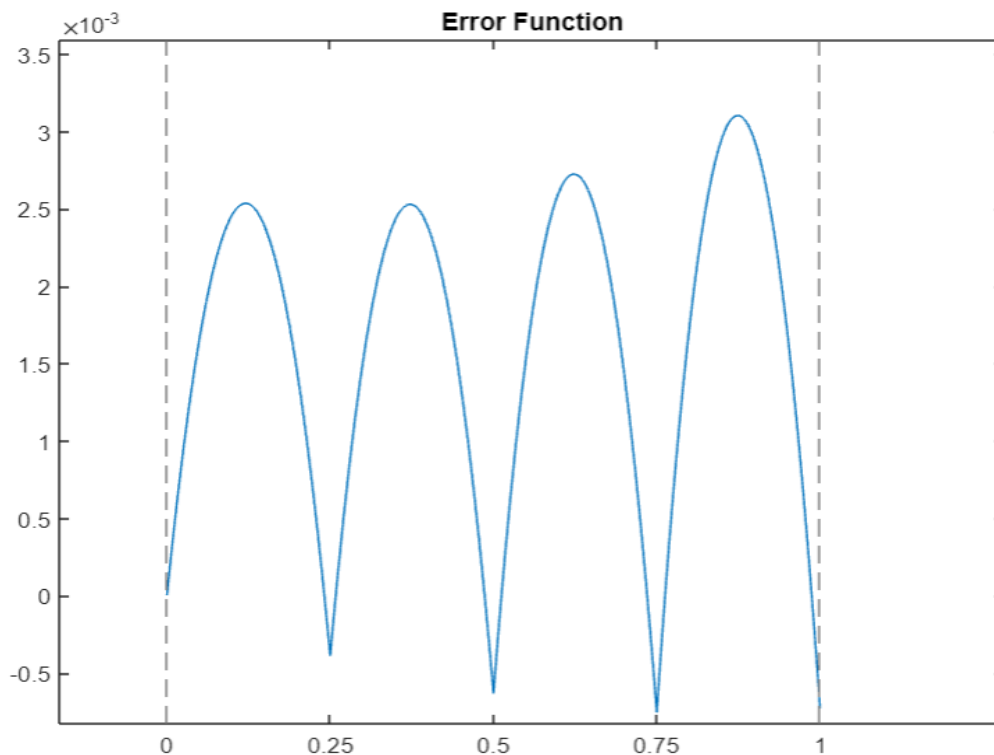


(d) PLOTTING ERROR FUNCTION:

$$e(x) = (u(x) - u_{\text{anal}}(x)) / |u_{\text{anal}}(x)| ; 0 < x < 1$$

```
c1=(1+2*exp(1))/(1+exp(2));
c2=(exp(2)-2*exp(1))/(1+exp(2));
syms a1(x) a2(x) a3(x) a4(x) a5(x) u_an(x)
a1(x) = piecewise(0<=x<= 0.25, (0.25-x)/(0.25), 0.25<=x<=1, 0)
a2(x) = piecewise(0<=x<=0.25, (x)/(0.25), 0.25<x<=0.5, (0.5-x)/(0.25), 0.5<=x<=1, 0)
a3(x) =
piecewise(0<=x<=0.25, 0, 0.25<=x<=0.50, (x-0.25)/(0.25), 0.50<x<=0.75, (0.75-x)/(0.25), 0.75
<=x<=1, 0)
a4(x) =
piecewise(0<=x<=0.50, 0, 0.5<=x<=0.75, (x-0.50)/(0.25), 0.75<x<=1.0, (1.0-x)/(0.25))
a5(x) = piecewise(0<=x<=0.75, 0, 0.75<=x<=1, (x-0.75)/(0.25))
u_an(x)=piecewise(0<=x<=1, c1*exp(x)+c2*exp(-x)+2)
u=3*a1+3.1652*a2+3.404*a3+3.7314*a4+4.1682*a5
e=(u-u_an)/u_an
figure(1)
fplot(e)
xticks(0:0.25:1)
title('Error Function')
figure(2)
fplot(u)
hold on
fplot(u_an)
title('Plots of Solutions')
legend('Approximate', 'Analytical', 'Location', 'southeast')
hold off
```



(e) PLOT of ANALYTICAL AND APPROXIMATE SOLUTIONS

