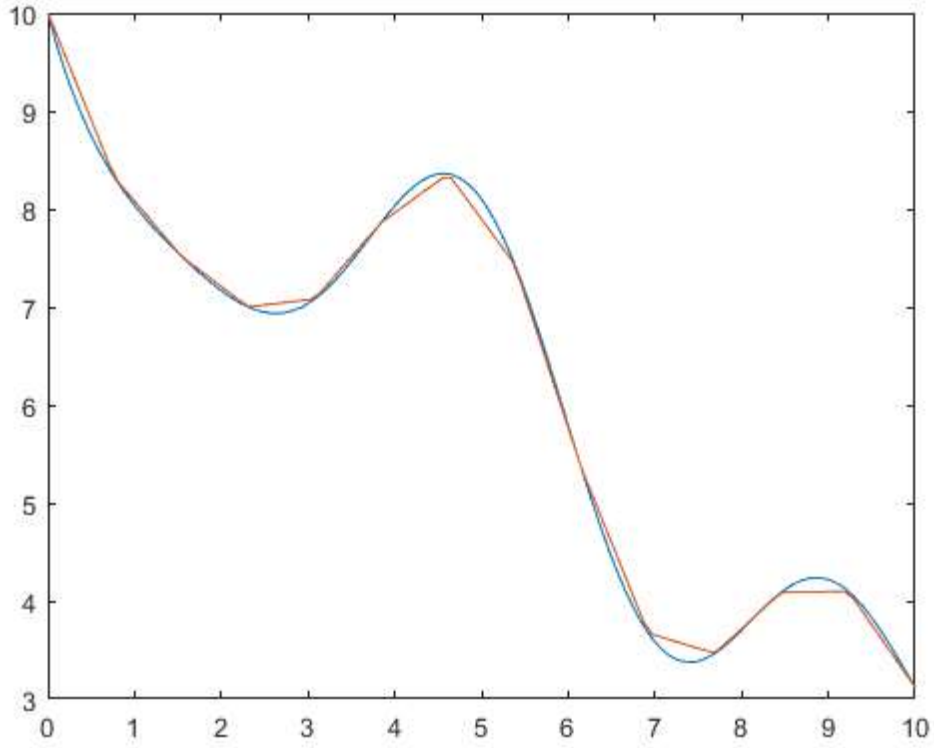
```
% AER1410 Assignment-8 Q-2


syms x
fun = sin(pi*x/2) + 20/(x+2) + exp(-x)*(x^4) + (x/10)^5;
p = 3;
error = 2;
while error >= 0.1
p = p +1;
interval = 10/(p-1);
points = linspace(0,10+interval,p+1);
psi = 0;
for i = 1:p
    yp = subs(fun,points(i));
    psi = psi + max(yp - (yp/interval)*abs(x-points(i)),0);
end

error = vpaintegral((fun-psi)^2,[0 10]);
end

disp("Number of Basis Function Needed :")
disp(p)

disp("error value :")
disp(error)

disp("Values of the Basis Function :")
disp(subs(fun,points'))

vals = linspace(0,10,100);
plot(vals,subs(fun,vals))
hold on;
plot(vals,subs(psi,x,vals))
hold off
```

```
Number of Basis Function Needed :
    14

error value :
0.0811

Values of the Basis Function :
    10
8.3195
7.5182
7.0004
7.0816
7.8647
8.3587
7.4323
5.3497
3.6700
3.4658
4.0926
4.0974
3.1207
```

```
2.3627
```



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