```
In[30]:= f[t_] := Exp[-t];
      f1[t_] := 1/(1+t);
      f2[t_] := 1/(2+t);
      f3[t_] := 1/(3+t);
      solution := Solve[{
           a * f1[1] + b * f2[1] + c * f3[1] == f[1],
           a * f1[2] + b * f2[2] + c * f3[2] = f[2],
           a * f1[3] + b * f2[3] + c * f3[3] = f[3], {a, b, c}];
      L[t_{-}] := Simplify[a * f1[t] + b * f2[t] + c * f3[t] /. solution];
      Plot[f[t] - L[t], {t, 1, 3}]
      0.004
      0.003
      0.002
Out[36]=
      0.001
                      1.5
                                                2.5
                                                             3.0
      -0.001
```

```
In[60]:= n = 5;
                                     Do[x[k] = k / n, \{k, 0, n\}];
                                     f[t_] := Sqrt[t];
                                     Do[c[k] =
                                                               \left( \left. \left( f[x[k+1]] - f[x[k]] \right) \right. / \left. \left( x[k+1] - x[k] \right) - \left( f[x[k]] - f[x[k-1]] \right) \right. / \left. \left( x[k] - x[k-1] \right) \right) / \left. \left( x[k] - x[k-1] \right) \right] / \left. \left( x[k] - x[k-1] \right) \right) / \left. \left( x[k] - x[k-1] \right) \right] / \left. \left( x[k] - x[k-1] \right) \right) / \left. \left( x[k] - x[k-1] \right) \right] / \left. \left( x[k] - x[k-1] \right) / \left( x[k-1] - x[k-1] \right) / \left. \left( x[k-1] - x[k-1] \right) \right] / \left. \left( x[k-1] - x[k-1] \right) / \left. \left( x[k-1] - x[k-1] \right) \right] / \left. \left( x[k-1] - x[k-1] \right) / \left( x[k-1] - x[k-1] \right) / \left. \left( x[k-1] - x[k-1] \right) / \left( x[k-1] - x[k-1] \right) / \left. \left( x[k-1] - x[k-1] \right) / \left
                                                                    2, {k, 1, n-1}];
                                     c[0] = ((f[x[0]] + f[x[n]]) / (x[n] - x[0]) + (f[x[1]] - f[x[0]]) / (x[1] - x[0])) / 2;
                                     c[n] = ((f[x[0]] + f[x[n]]) / (x[n] - x[0]) - (f[x[n]] - f[x[n-1]]) / (x[n] - x[n-1])) / 2;
                                     I1[t_] := Sum[c[k] * Abs[t - x[k]], \{k, 0, n\}];
                                     Plot[f[t] - I1[t], \{t, 0, 1\}, PlotRange \rightarrow All]
                                     Plot[{f[t], I1[t]}, {t, 0, 1}]
                                     0.10
                                     0.08
                                    0.06
Out[67]=
                                     0.04
                                     0.02
                                                                                                                                                                                                                                                                                                                                                                                              1.0
                                                                                                                                                                                                                                                          0.6
                                                                                                                                                                                                                                                                                                                           0.8
                                     1.0
                                    0.8
                                     0.6
Out[68]=
                                     0.4
                                     0.2
                                                                                                                  0.2
                                                                                                                                                                                    0.4
                                                                                                                                                                                                                                                       0.6
                                                                                                                                                                                                                                                                                                                          8.0
                                                                                                                                                                                                                                                                                                                                                                                             1.0
```