```
directorio = Directory[]
```
directorio

$$\text{ftest}[z\_] = \sum_{k=1}^{\infty} \frac{1}{k\,\hat{}\,6}\ (z\,\hat{}\,k + z\,\hat{}\,(-k))$$

```
TeXForm[%]
```
forma TeX

```
Attributes[ftest] = {Listable}
```
atributos listable

```
(* cardan.wls obtains the system of arcs related with
 the cardan device and write it as arcosalpha *)

n = 30; T = 2 * Pi; betacardan = Pi / 6;
```
número pi número pi

```
Get["Dropbox/articulo2023/cardan.wls"]
```
recibe

```
(* arcos.wls obtains all the system of
 arcs related with arcosalpha in the sense of
 the paper and the related nodal systems *)
Get["Dropbox/atypeofinterpolation2023/arcos.wls"]
```
recibe

```
(* derivadas.wls obtains the derivatives
 used in the paper for a nodal system in T
 in this case for  alphaW2n nodal system *)
listaalpha = alphaW2n;
listaarcosalpha = arcosalphaW2n;
Get["Dropbox/atypeofinterpolation2023/derivadas.wls"];
```
recibe

```
derivadasalphaW2n = derivadas;
derivadassegundasalphaW2n =
  derivadas * factoresderivadassegundas;

(* same comment as before *)
listaalpha = alphaYn;
listaarcosalpha = arcosalphaYn;
Get["Dropbox/atypeofinterpolation2023/derivadas.wls"];
```
recibe

recibe

```
derivadasalphaYn = derivadas;
derivadassegundasalphaYn =
  derivadas * factoresderivadassegundas;
```

```
(* same comment as before *)
listaalpha = alphaZn;
listaarcosalpha = arcosalphaZn;
Get["Dropbox/atypeofinterpolation2023/derivadas.wls"];
```

recibe

```
derivadasalphaZn = derivadas;
derivadassegundasalphaZn =
  derivadas * factoresderivadassegundas;
```

```
(* u and v in the sense of the paper *)
u = ftest[alphaW2n]; v = ftest'[alphaW2n];
```

```
(* semi Hermite and semi Hermite-
 Fejer interpolants using the barycentric formulae *)

SHFejer[z_] =
  (Sum[(alphapwp[[2 k]] * derivadasalphaZn[[k]] * u[[2 k]])/
      ((z - alphaW2n[[2 k]]) (derivadasalphaW2n[[2 k]])^2 +
     (alphapwp[[2 k - 1]] /
        ((z - alphaW2n[[2 k - 1]]) derivadasalphaW2n[[2 k - 1]] *
          derivadasalphaYn[[k]])) (1/(z - alphaW2n[[2 k - 1]]) -
        derivadassegundasalphaW2n[[2 k - 1]]/
          (2 derivadasalphaW2n[[2 k - 1]]) -
        (derivadassegundasalphaYn[[k]]/(2 derivadasalphaYn[[k]]) +
           3 n/2) u[[2 k - 1]])), {k, 1, n}])/
  (Sum[(alphapwp[[2 k]] * derivadasalphaZn[[k]])/
      ((z - alphaW2n[[2 k]]) (derivadasalphaW2n[[2 k]])^2 +
     (alphapwp[[2 k - 1]] /
        ((z - alphaW2n[[2 k - 1]]) derivadasalphaW2n[[2 k - 1]] *
          derivadasalphaYn[[k]])) (1/(z - alphaW2n[[2 k - 1]]) -
```

$$\frac{\text{derivadassegundasalphaW2n}[\![2\,k-1]\!]}{2\ \text{derivadasalphaW2n}[\![2\,k-1]\!]}-\frac{\text{derivadassegundasalphaYn}[\![k]\!]}{2\,\text{derivadasalphaYn}[\![k]\!]}+\frac{3\,n}{2}\Bigg)\Bigg)\Bigg);$$

$$\text{SHerm}[z\_] =$$

$$\Bigg(\sum_{k=1}^{n}\Bigg(\frac{\text{alphapwp}[\![2\,k]\!]\times\text{derivadasalphaZn}[\![k]\!]\times u[\![2\,k]\!]}{(z-\text{alphaW2n}[\![2\,k]\!])\,(\text{derivadasalphaW2n}[\![2\,k]\!])\,\hat{}\,2}+$$

$$(\text{alphapwp}[\![2\,k-1]\!]\,/\,((z-\text{alphaW2n}[\![2\,k-1]\!])\,\text{derivadasalphaW2n}[\![2\,k-1]\!]\times\text{derivadasalphaYn}[\![k]\!]))\Bigg(\frac{1}{(z-\text{alphaW2n}[\![2\,k-1]\!])}-\frac{\text{derivadassegundasalphaW2n}[\![2\,k-1]\!]}{2\ \text{derivadasalphaW2n}[\![2\,k-1]\!]}-\frac{\text{derivadassegundasalphaYn}[\![k]\!]}{2\,\text{derivadasalphaYn}[\![k]\!]}+\frac{3\,n}{2}\Bigg)\,u[\![2\,k-1]\!]\Bigg)+$$

$$\sum_{k=1}^{n}((\text{alphapwp}[\![2\,k-1]\!]\,/\,((z-\text{alphaW2n}[\![2\,k-1]\!])\,\text{derivadasalphaW2n}[\![2\,k-1]\!]\times\text{derivadasalphaYn}[\![k]\!]))\,v[\![2\,k-1]\!])\Bigg)\Bigg/$$

$$\Bigg(\sum_{k=1}^{n}\Bigg(\frac{\text{alphapwp}[\![2\,k]\!]\times\text{derivadasalphaZn}[\![k]\!]}{(z-\text{alphaW2n}[\![2\,k]\!])\,(\text{derivadasalphaW2n}[\![2\,k]\!])\,\hat{}\,2}+$$

$$(\text{alphapwp}[\![2\,k-1]\!]\,/\,((z-\text{alphaW2n}[\![2\,k-1]\!])\,\text{derivadasalphaW2n}[\![2\,k-1]\!]\times\text{derivadasalphaYn}[\![k]\!]))\Bigg(\frac{1}{(z-\text{alphaW2n}[\![2\,k-1]\!])}-\frac{\text{derivadassegundasalphaW2n}[\![2\,k-1]\!]}{2\ \text{derivadasalphaW2n}[\![2\,k-1]\!]}-\frac{\text{derivadassegundasalphaYn}[\![k]\!]}{2\,\text{derivadasalphaYn}[\![k]\!]}+\frac{3\,n}{2}\Bigg)\Bigg)\Bigg);$$

```
BB = Plot[{Re[SHerm[E^(I x)]], Re[ftest[E^(I x)]]},
  {x, 0, Pi/4 + .45}, PlotRange → Full, PlotPoints → 200,
  PlotStyle → {{Red, Thickness[.001]},
    {Black, Thickness[.001]}}, AspectRatio → 5/7];
BB1 = Plot[{Re[SHFejer[E^(I x)]], Re[ftest[E^(I x)]]},
  {x, 0, Pi/4 + .45}, PlotRange → Full, PlotPoints → 200,
  PlotStyle → {{Red, Thickness[.001]},
    {Black, Thickness[.001]}}, AspectRatio → 5/7];
```

```
AA = Table[{Re[Log[alphaW2n[[k]]]/I],
   Re[ftest[alphaW2n[[k]]]]}, {k, 1, 2 n}];
AA = ListPlot[AA, PlotStyle → PointSize[.005]];
Show[BB, AA]
Show[BB1, AA]
```

Out[ ]=

```
/Users/eliasberriochoaesnaola
```

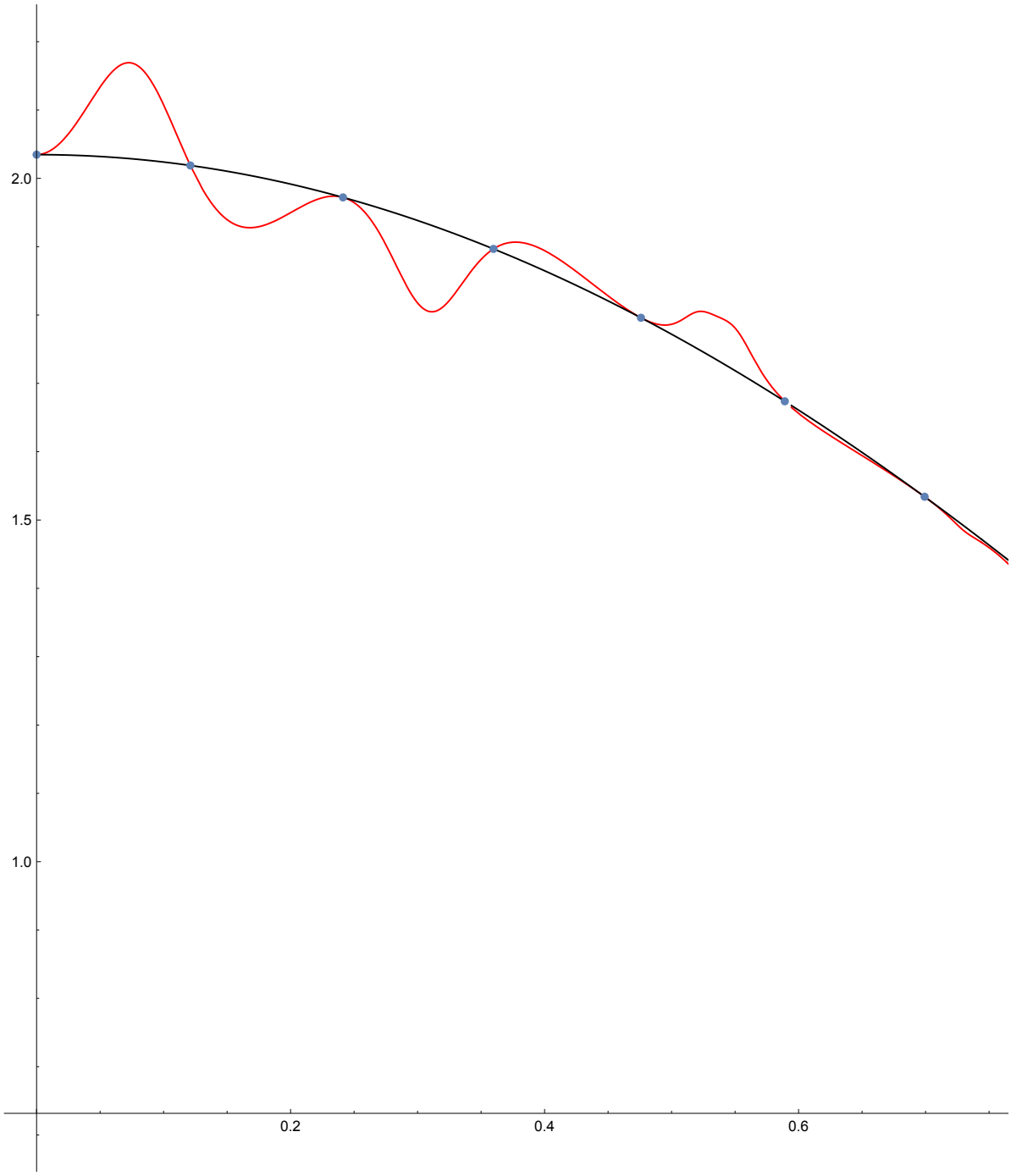
Out[ ]=

$$\text{PolyLog}\left[6, \frac{1}{z}\right] + \text{PolyLog}[6, z]$$

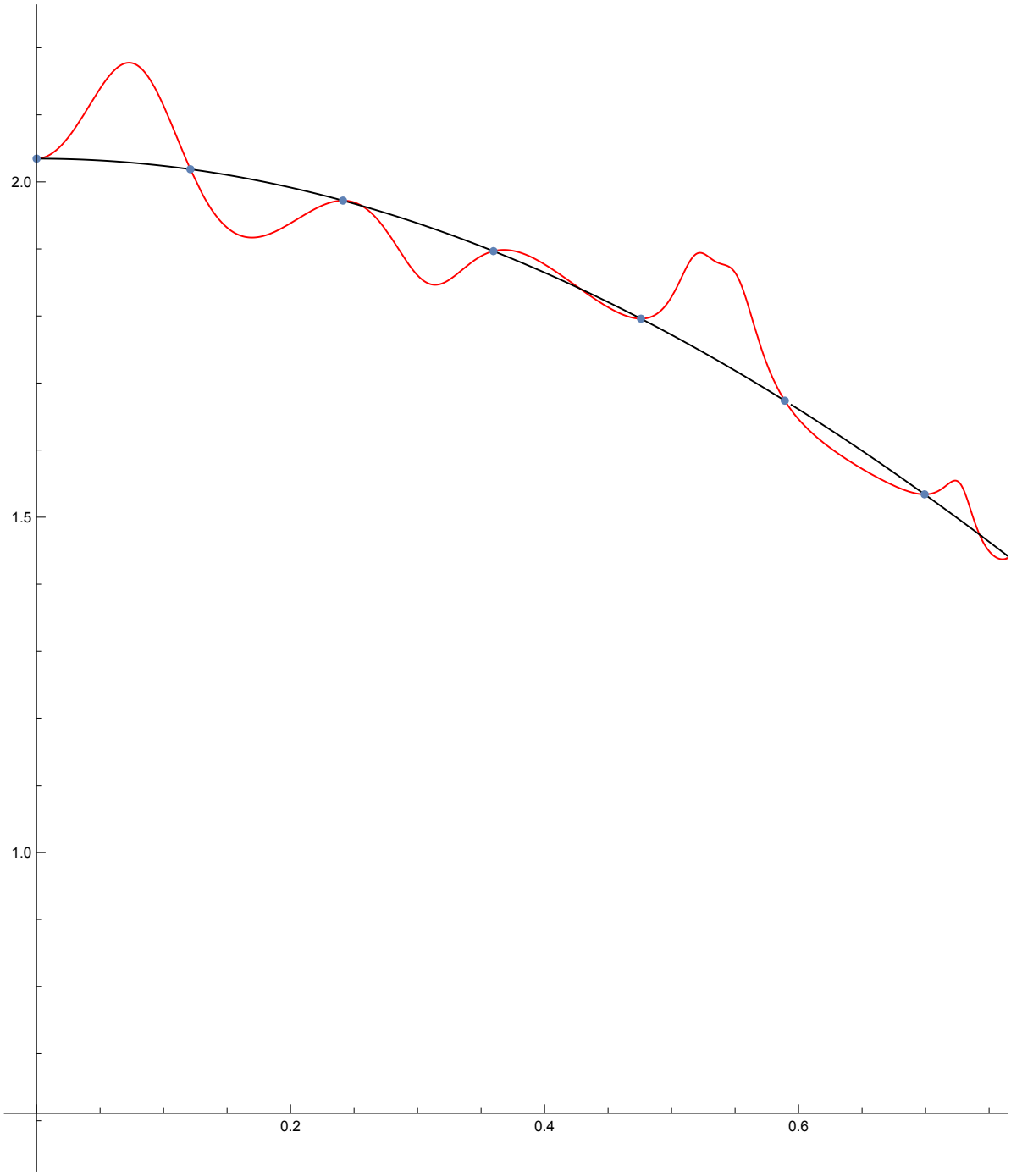
Out[ ]=

```
{Listable}
```

Out[ ]=



Out[ ]=




```
\text{Li}_6\left(\frac{1}{z}\right)+\text{Li}_6(z)
```