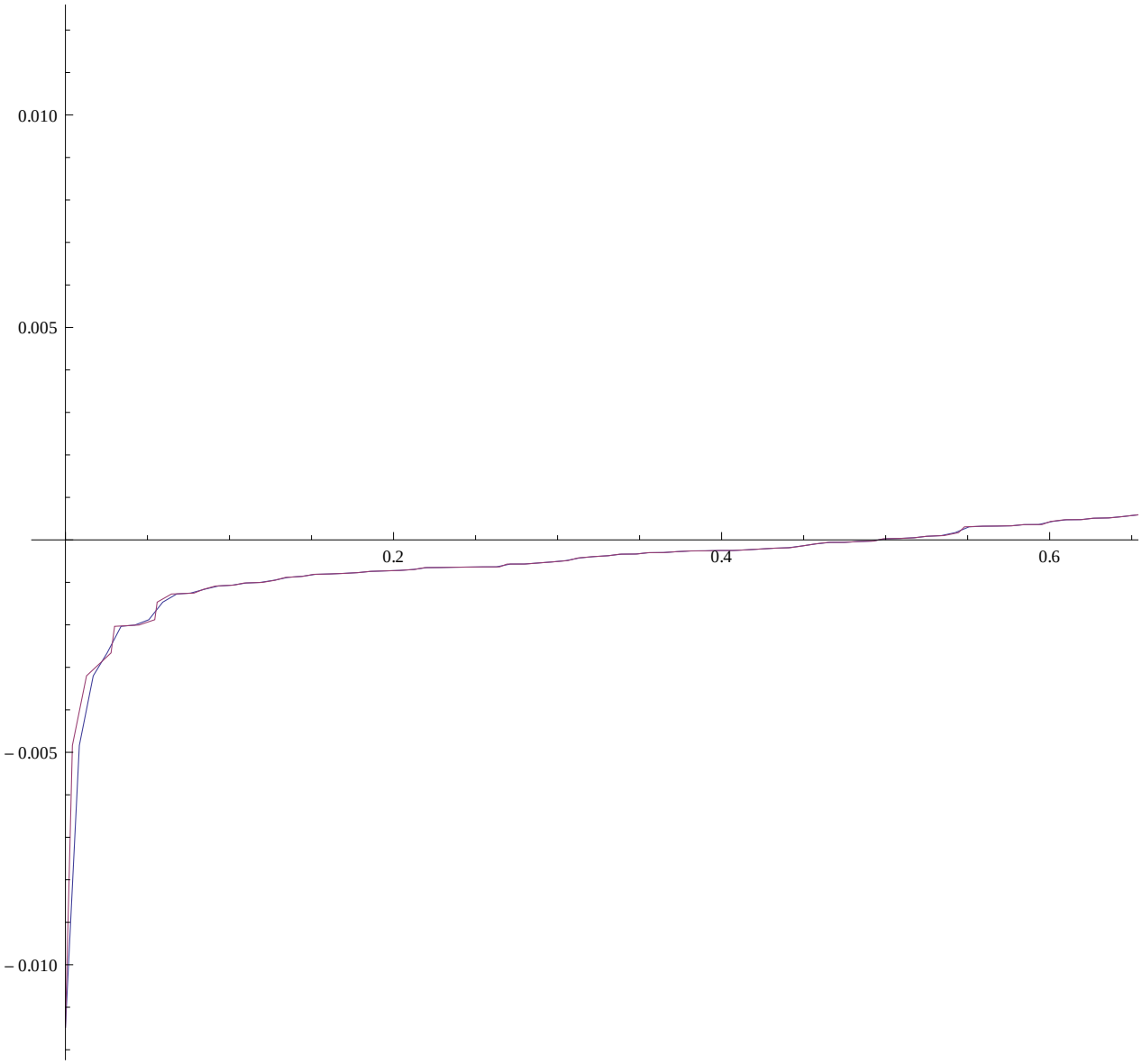
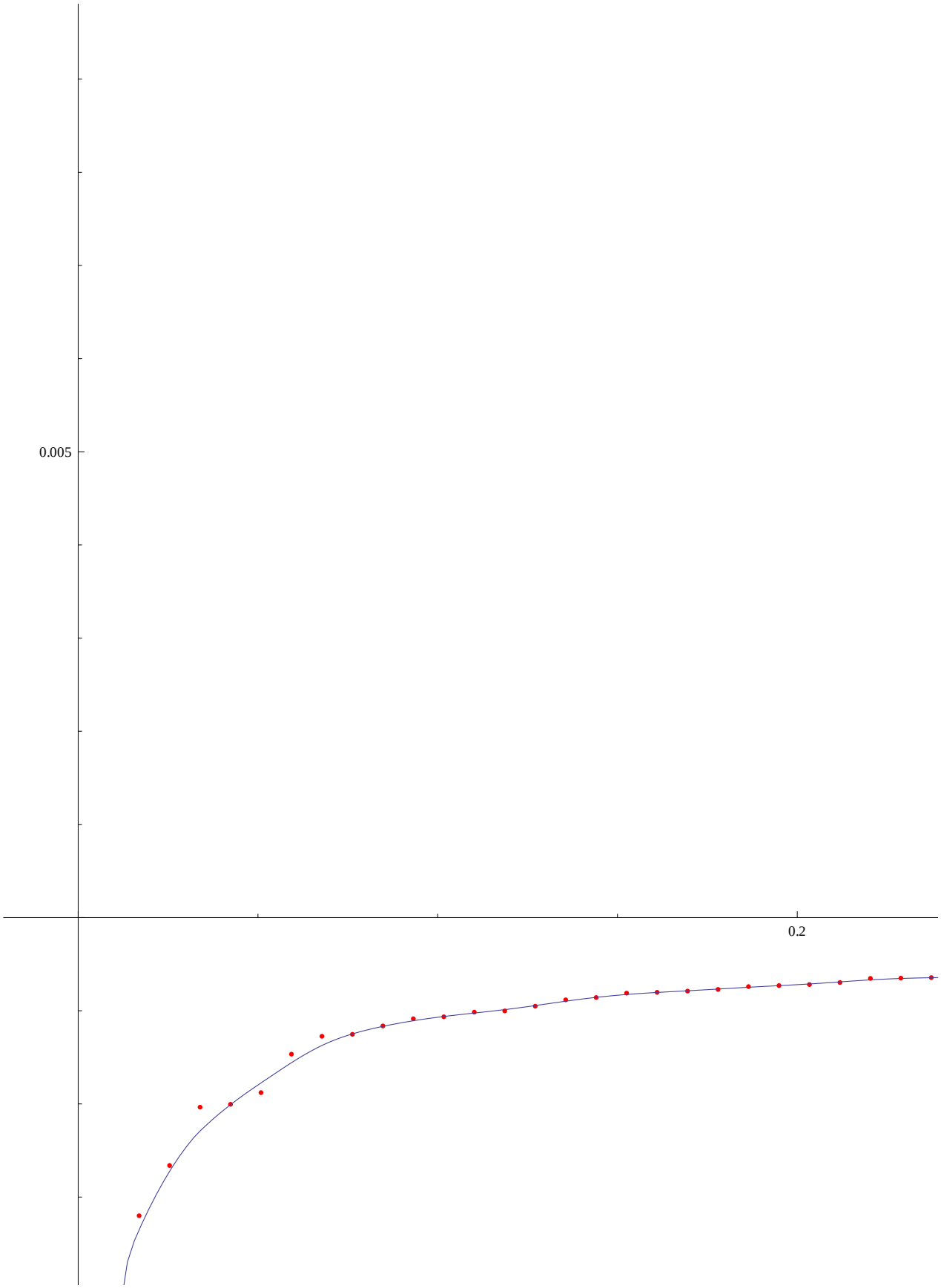
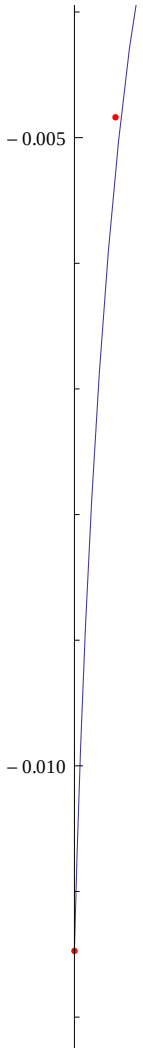
```
d = {{1, 1}, {2, 4}, {5, 1}, {8, -4},
   {9, -3}, {10, 1}, {11, 1}, {11.1, 2}, {11.4, 4}, {12, 0}};
d = XY;
n = Length[d] - 1;(*Anzahl der Punkte - 1*)
p = 10;(*Ordnung*)
m = n + 1 + p ;(*Anzahl der Knots - 1*)
(*Knot-Erzeugung*)
u = Join[Table[0, {i, p}], Table[i / (n + 1 - p), {i, 0, n + 1 - p}], Table[1, {i, p}]];

P[t0_] := Module[{a, k, j = m, i, t = t0, u = u, d = d * w, p = p, n = n, m = m, w = w},
  (*j Bestimmtung*)
  If[t == 0, j = 1,
   While[t <= u[[j]], j--]];
  If[j <= p, j = p + 1];

  (*Gewichtung*)

  (*Berechnung*)
  For[k = 1, k ≤ p, k++,
   For[i = j - p + k, i ≤ j, i++,
     a = (t - u[[i]]) / (u[[i + p + 1 - k]] - u[[i]]);
     d[[i]] = (1 - a) d[[i - 1]] + a d[[i]];
     w[[i]] = (1 - a) w[[i - 1]] + a w[[i]];
    ];
  ];
  d[[j]] / w[[j]]
 ]

w = Table[1, {i, n + 1}];

w = (M[Length[d]].Transpose[d][[2]]); w = (0.01 + w / Max[w]) ^ 2;



d[[3]]

{0.016949, -0.0032}



dt = d; d = {}; c = 0.001; AppendTo[d, dt[[1]]];
For[i = 2, i < Length[dt], i++,
 fss = (-2 dt[[i, 2]] + dt[[i + 1, 2]] + dt[[i - 1, 2]]) (n - 1) ^ 2;
 AppendTo[d, dt[[i]] + 1 / (n - 1) {1, 0} ArcTan[fss] / Pi ];
]
AppendTo[d, dt[[Length[dt]]]];
```

```
ListPlot[{dt, d}, Joined → True, PlotRange → All]
```




```
tt = Table[P[x], {x, 0, 1, 0.001}]; d = dt;
Show[ListPlot[d, PlotStyle → Red, PlotRange → All],
 ListPlot[tt, Joined → True, PlotRange → All]]
```


0.005
0.2



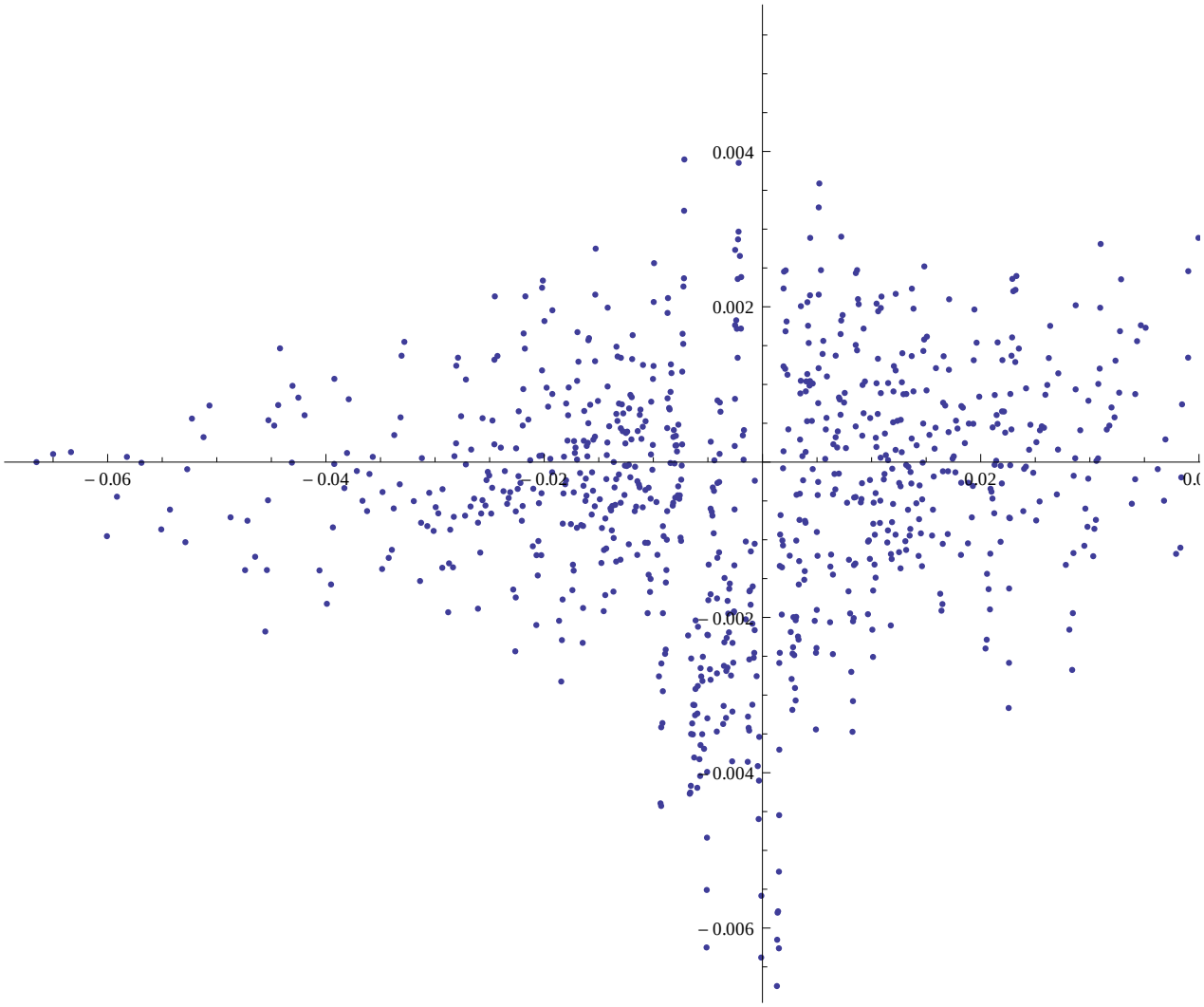

```
ListPlot[{#[[1]], #[[2]] - IP[#[[1]]]} & /@ d]
```

Part::partd: Part specification
{{−0.0665223, 0.}, {−0.0576328, 0.00595448}, {−0.0520835, 0.012011}, ≪5≫, {−0.0348844, 0.0495703}, {−0.0331208, 0.0557423}, ≪91≫}〚0, 1〛
is longer than depth of object. ≫

Part::partd: Part specification
{{−0.0665223, 0.}, {−0.0576328, 0.00595448}, {−0.0520835, 0.012011}, ≪5≫, {−0.0348844, 0.0495703}, {−0.0331208, 0.0557423}, ≪91≫}〚0, 2〛
is longer than depth of object. ≫

Part::partd: Part specification
{{−0.0665223, 0.}, {−0.0576328, 0.00595448}, {−0.0520835, 0.012011}, ≪5≫, {−0.0348844, 0.0495703}, {−0.0331208, 0.0557423}, ≪91≫}〚0, 2〛
is longer than depth of object. ≫

General::stop: Further output of Part::partd will be suppressed during this calculation. ≫




```
d[[350]] // N
```

```
{-0.00612564, 0.392135}
```

```
IP[-0.006125639472671196]
```

```
0.394174
```

```
IP[t0_] := Module[{t = t0, tt = tt, j = Length[tt]},
  (*j  Bestimmtung*)
  If[t == 0, j = 1,
   While[t ≤ tt[[j, 1]], j--]];
  tt[[j, 2]] + (tt[[j + 1, 2]] - tt[[j, 2]]) (t - tt[[j, 1]]) / (tt[[j + 1, 1]] - tt[[j, 1]])
 ]
```

```
M[n_] := SparseArray[{{1, 1} → -1, n {1, 1} → 1,
    {i_, j_} /; i == 1 && i == j - 1 → 1, {i_, j_} /; i == n && i == j + 1 → -1,
    {i_, j_} /; i == j + 1 → -1 / 2, {i_, j_} /; i == j - 1 → 1 / 2}, n {1, 1}];
```

Length [w]

119