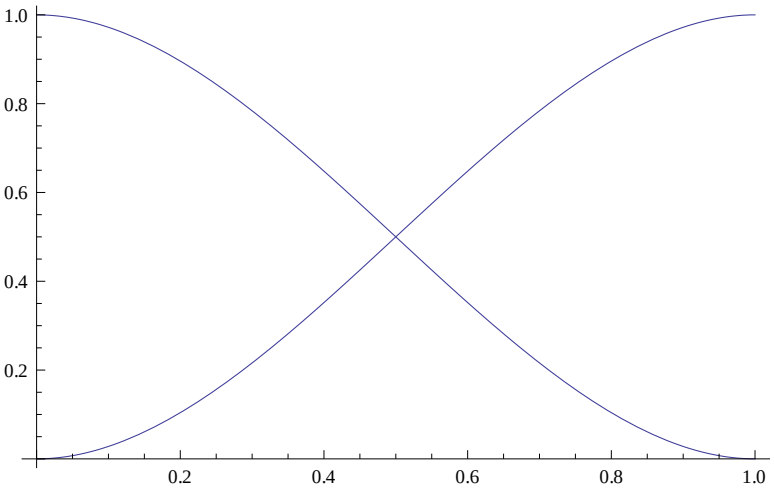
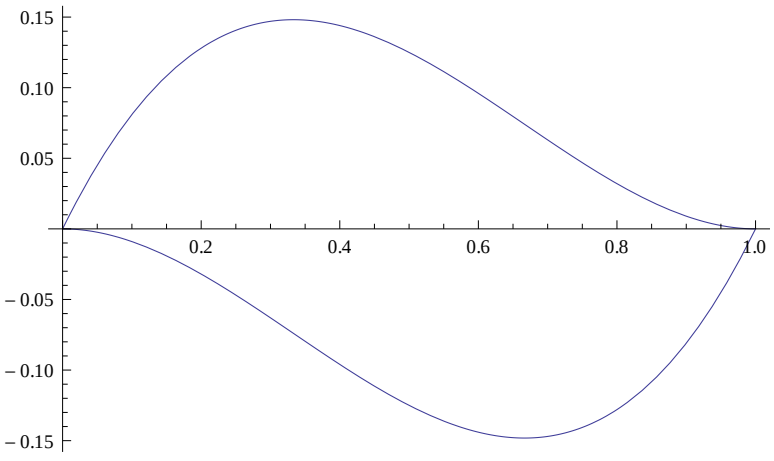
```
Exit[];

n = 3;

x[i_] := 1 / (n - 1) * (i - 1)

Table[x[i], {i, n}]
```

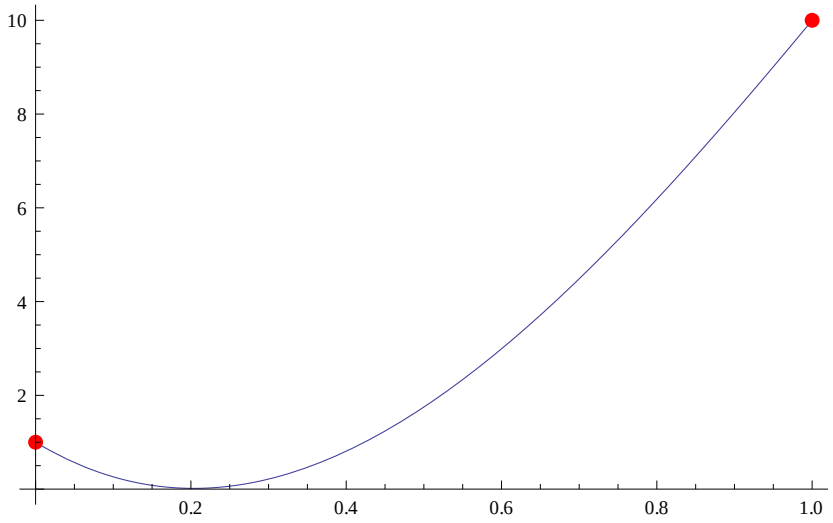
$$\left\{0, \frac{1}{2}, 1\right\}$$

```
n = 2;
x[i_] := 1 / (n - 1) * (i - 1);
M = Join[Table[Table[If[j == 0, 1, x[i]^j], {j, 0, n + 1}], {i, n}],
    Table[Table[If[j == 0, 0, If[j == 1, 1, j * i]], {j, 0, n + 1}], {i, 0, 1}]];
m = LinearSolve[M];
P = Join[Table[m[Join[Table[KroneckerDelta[k, i], {i, n}], {0, 0}]], {k, n}],
    Table[m[Join[Table[0, {i, n}], Table[KroneckerDelta[k, i], {i, 2}]]], {k, 2}]];
p[j_] := Sum[P[[j, k + 1]] * x^k, {k, 0, n + 1}];
Plot[{Table[p[i], {i, n}]}, {x, 0, 1}]
Plot[{Table[p[i + n], {i, 1, 2}]}, {x, 0, 1}, PlotRange -> All]
Plot[{Table[D[p[i + n], x] /. x → y, {i, 2}]}, {y, 0, 1}];
```





```
Punkte = {1, 10, -10, 20};
Show[Plot[{Sum[Punkte[[k]] * p[k], {k, n + 2}]}, {x, 0, 1}, PlotRange -> All], ListPlot[
  Table[{x[i], Punkte[[i]]}, {i, n}], PlotStyle → Directive[PointSize[Large], Red]]]
```




```
f[y_] := ArcTan[100 * y]; Punkte = Join[Table[f[x[i]], {i, n}], {f'[x[1]], f'[x[n]]}];
```