

```
n = 8;
```

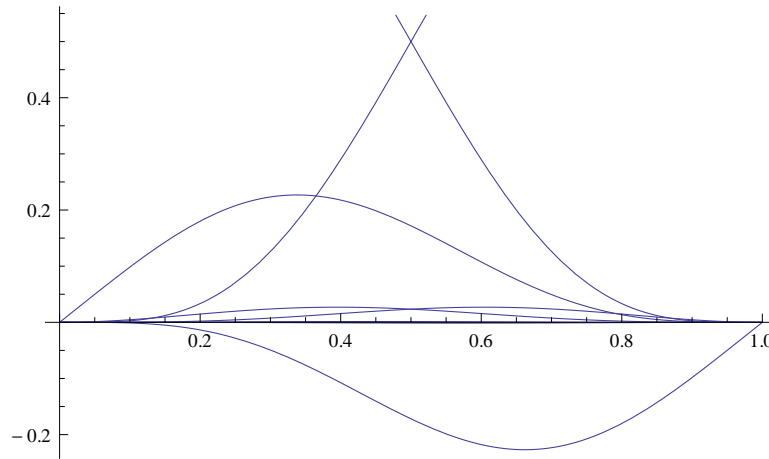
```
f[i_, x_] := Sum[c[i, j] x^(j-1), {j, n}]; a = Table[D[f[i, x], {x, k-1}], {k, n/2}]
```

```
{c[i, 1] + x c[i, 2] + x^2 c[i, 3] + x^3 c[i, 4] + x^4 c[i, 5] + x^5 c[i, 6] + x^6 c[i, 7] + x^7 c[i, 8],  
c[i, 2] + 2 x c[i, 3] + 3 x^2 c[i, 4] + 4 x^3 c[i, 5] + 5 x^4 c[i, 6] + 6 x^5 c[i, 7] + 7 x^6 c[i, 8],  
2 c[i, 3] + 6 x c[i, 4] + 12 x^2 c[i, 5] + 20 x^3 c[i, 6] + 30 x^4 c[i, 7] + 42 x^5 c[i, 8],  
6 c[i, 4] + 24 x c[i, 5] + 60 x^2 c[i, 6] + 120 x^3 c[i, 7] + 210 x^4 c[i, 8]}
```

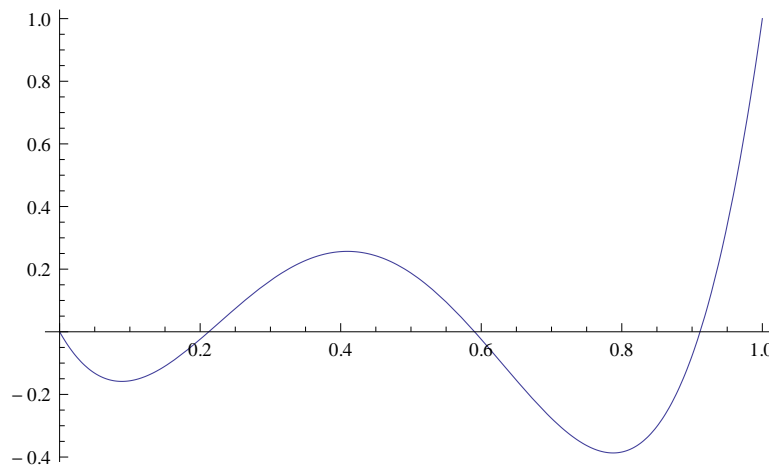
```
df[j_, b_] := a /. x -> b /. i -> j
```

```
r = Solve[Flatten[Join[Table[df[i, 0][[k]] ==  
HeavisideTheta[0.1 + n/2 - i] (KroneckerDelta[i, k] + KroneckerDelta[i, k + n/2]),  
{k, 1, n/2}, {i, n}], Table[df[i, 1][[k]] == HeavisideTheta[-0.1 + i - n/2]  
(KroneckerDelta[i, k] + KroneckerDelta[i, k + n/2]), {k, 1, n/2}, {i, n}]]],  
Flatten[Table[c[i, j], {i, n}, {j, n}]]][[1]];
```

```
Plot[Table[f[i, x], {i, n}] /. r, {x, 0, 1}]
```



```
Plot[df[8, x][[4]] /. r, {x, 0, 1}]
```



```
df[1, x][[1]]
```

```
c[i, 1] + x c[i, 2] + x^2 c[i, 3] + x^3 c[i, 4] + x^4 c[i, 5] + x^5 c[i, 6]
```