Krav2

October 24, 2019

1 Krawtchouk Polynomials

$$(1+v)^{N-j}(1-v)^j = \sum_{i=0}^{N} v^i \,\phi_i(j)$$

1.0.1 where the ϕ_i are polynomials in j

Now we look at the polynomials as functions of j.

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N=2
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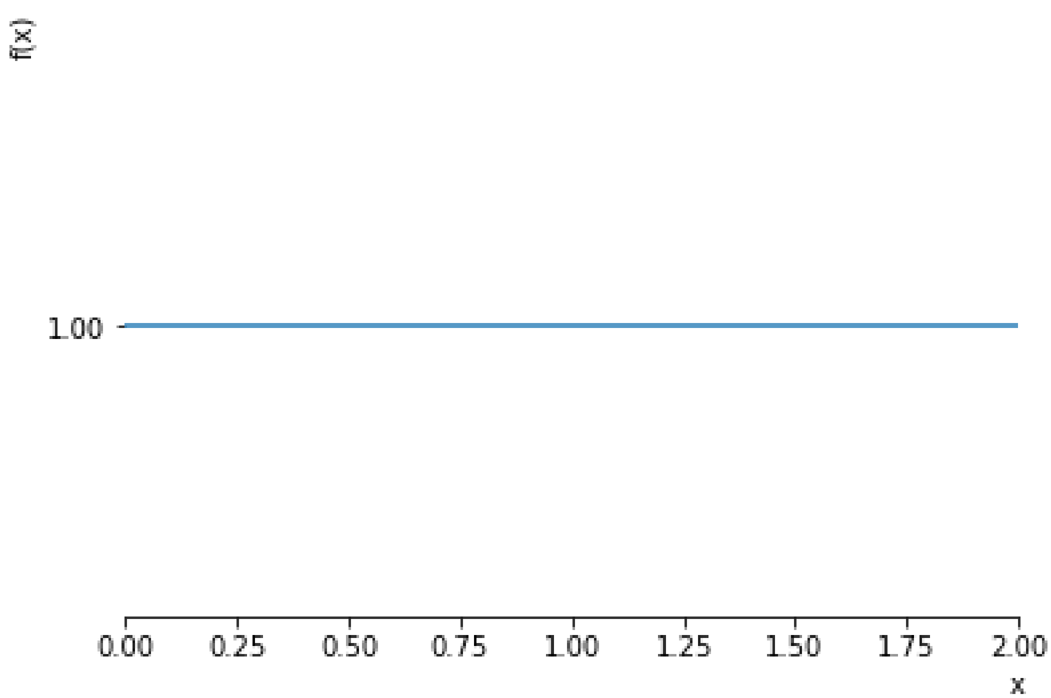
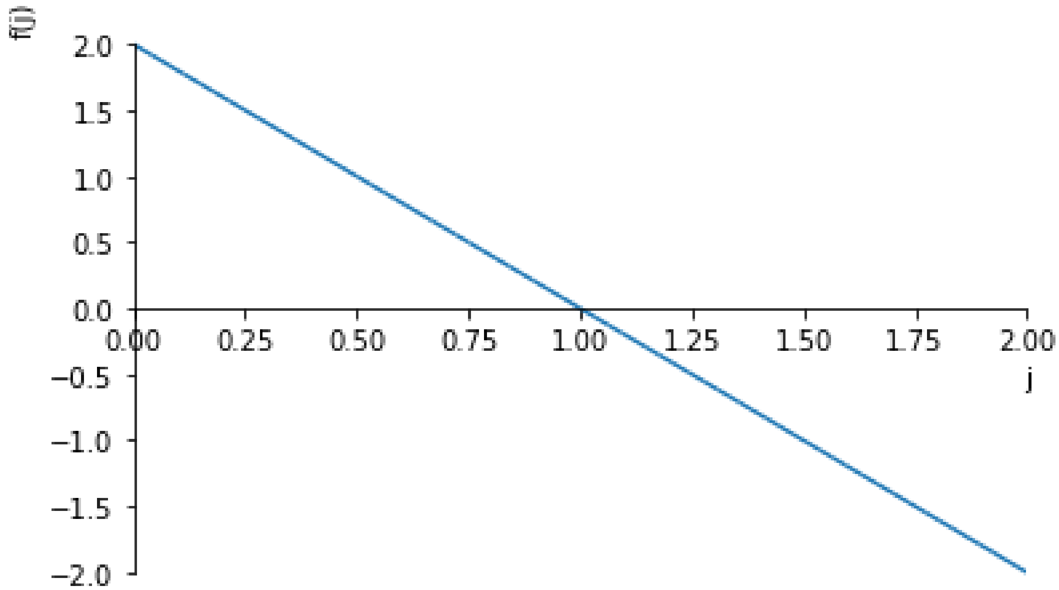
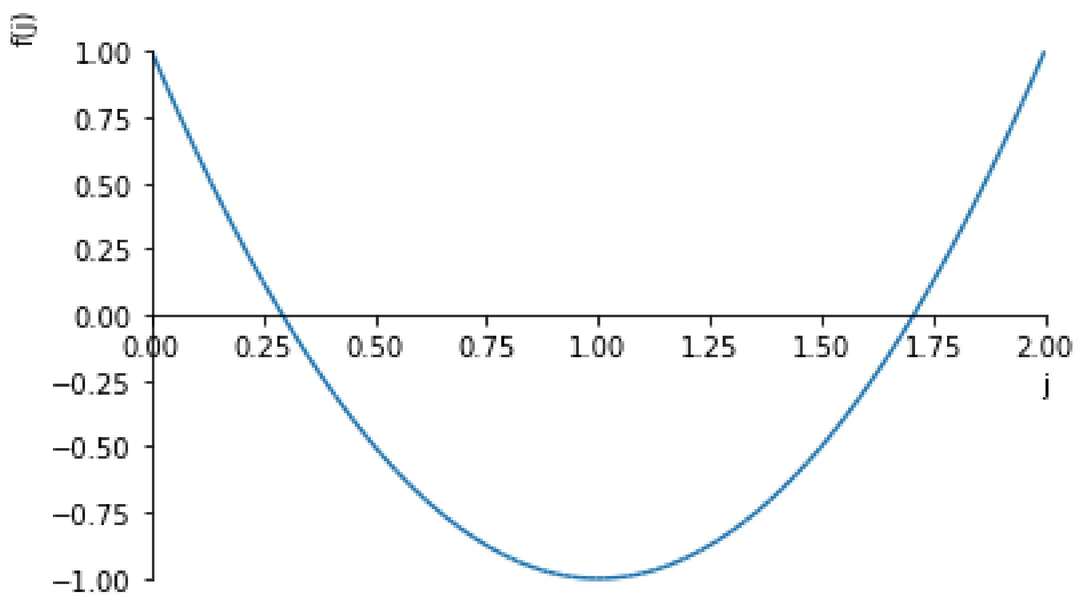
1
$2-2j$
$2j^2-4j+1$
$\phi_0(j) =$
1



$\phi_1(j) =$
$2 - 2j$



$\phi_2(j) =$
$2j^2 - 4j + 1$



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N=3
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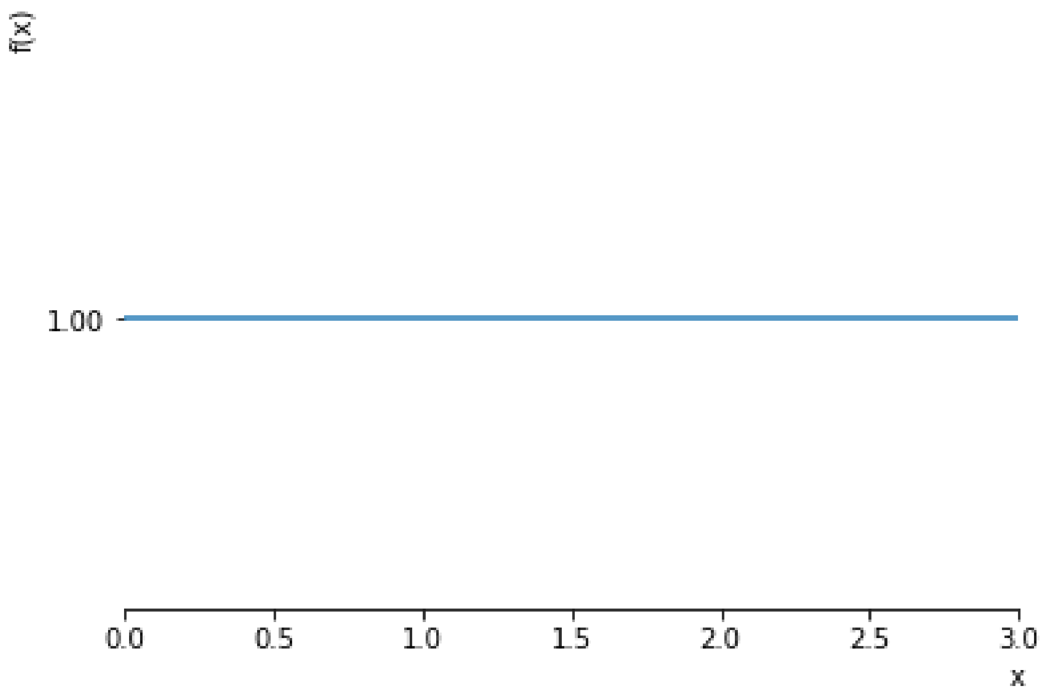
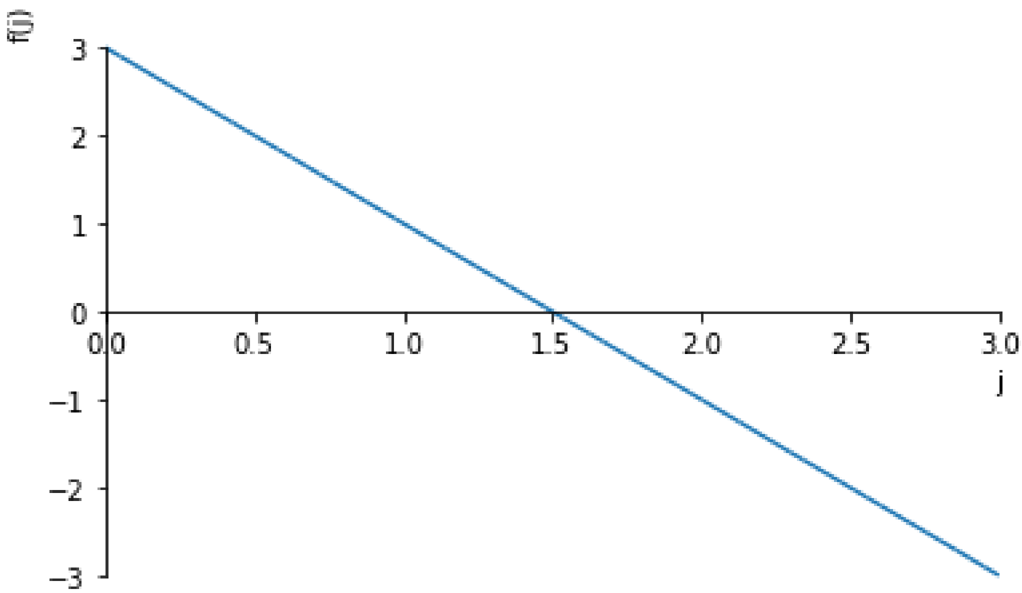
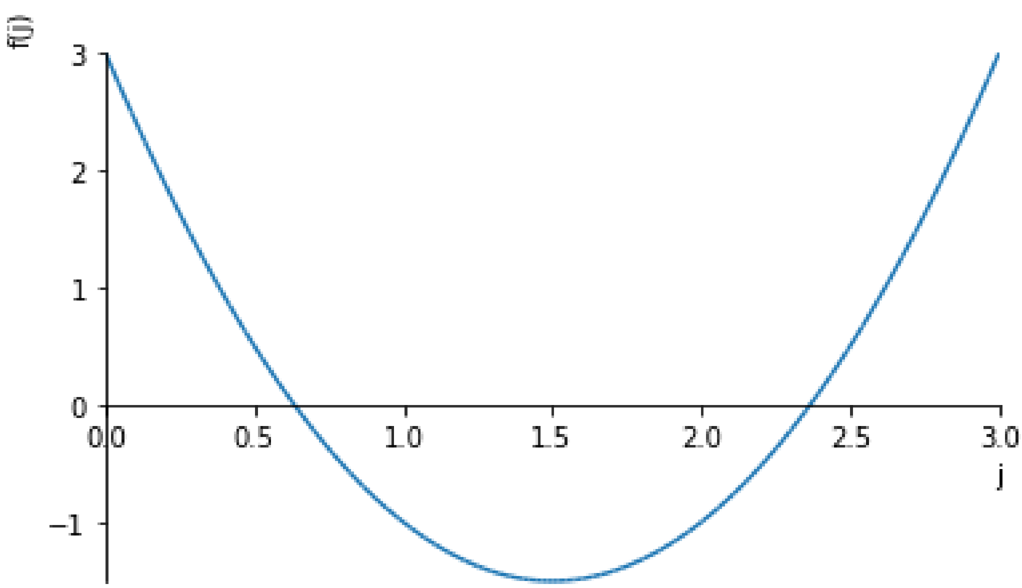
1
$3 - 2j$
$2j^2 - 6j + 3$
$-\frac{4j^3}{3} + 6j^2 - \frac{20j}{3} + 1$
$\phi_0(j) =$
1



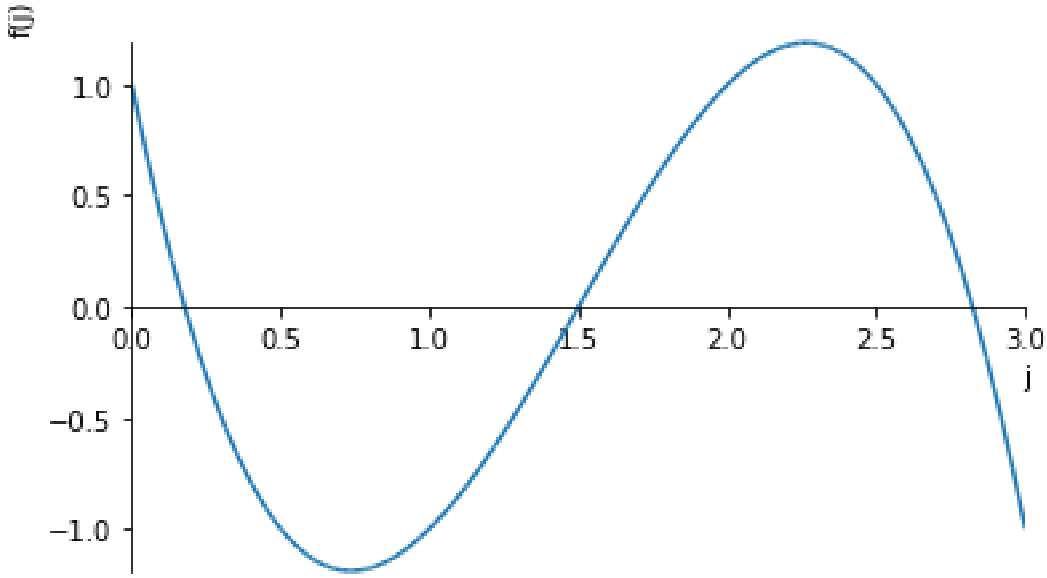
$\phi_1(j) =$
$3 - 2j$



$\phi_2(j) =$
$2j^2 - 6j + 3$

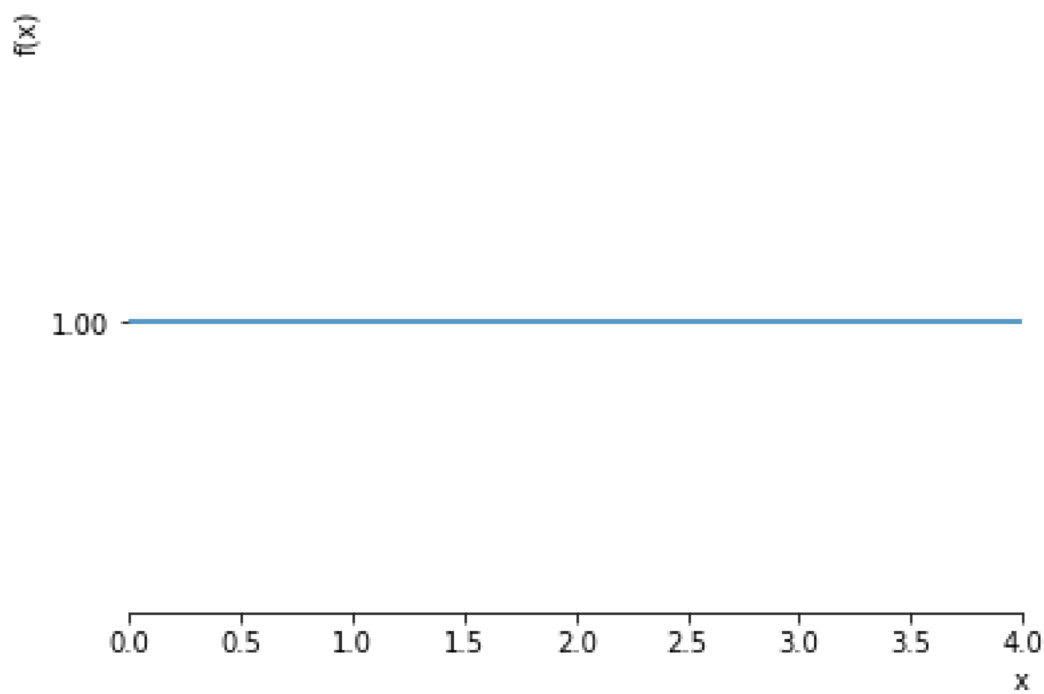


$\phi_3(j) =$
$-\frac{4j^3}{3} + 6j^2 - \frac{20j}{3} + 1$

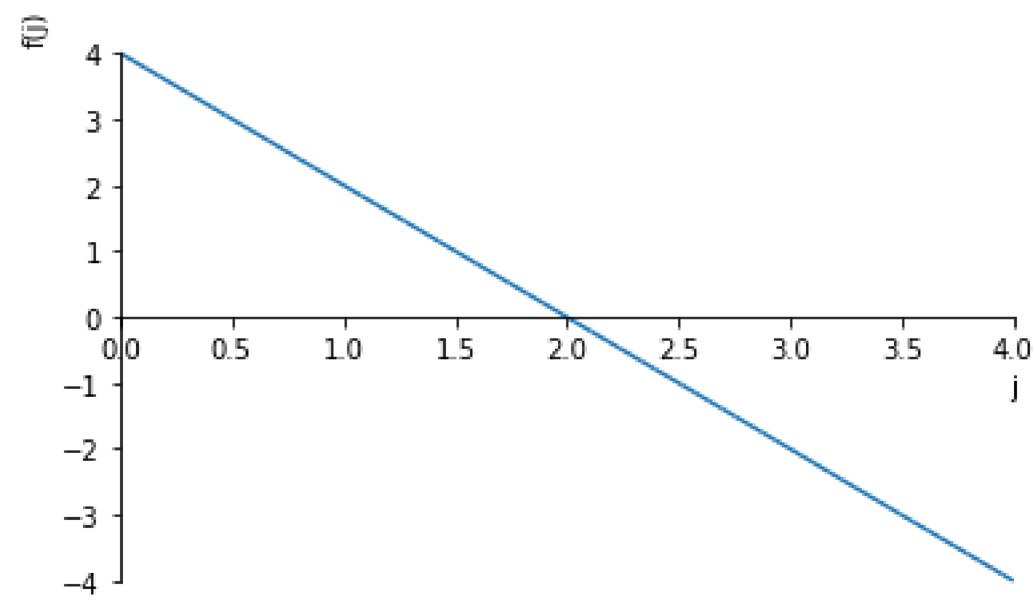


N=4

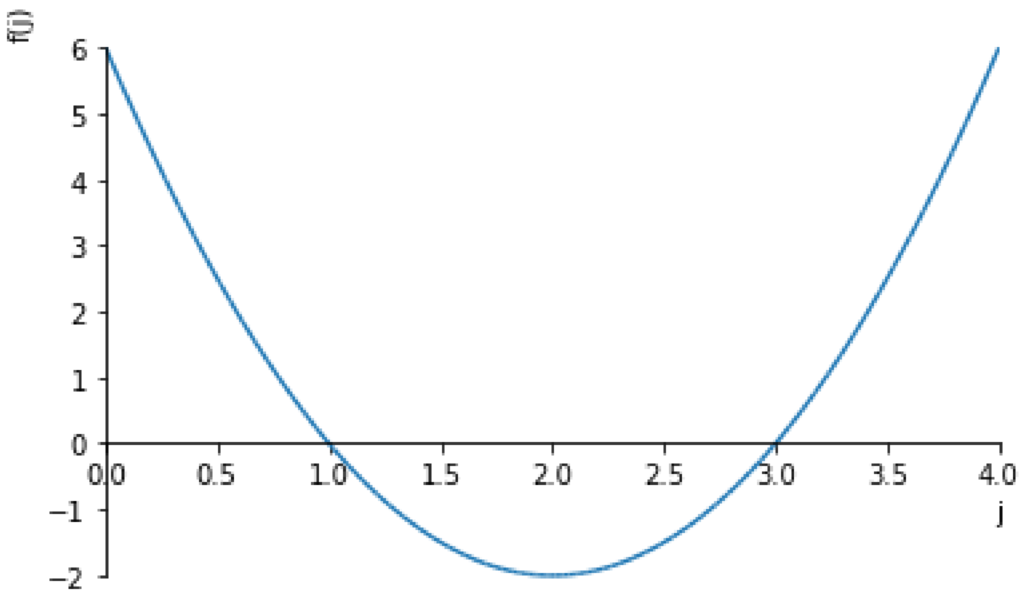
1
$4 - 2j$
$2j^2 - 8j + 6$
$-\frac{4j^3}{3} + 8j^2 - \frac{38j}{3} + 4$
$\frac{2j^4}{3} - \frac{16j^3}{3} + \frac{40j^2}{3} - \frac{32j}{3} + 1$
$\phi_0(j) =$
1



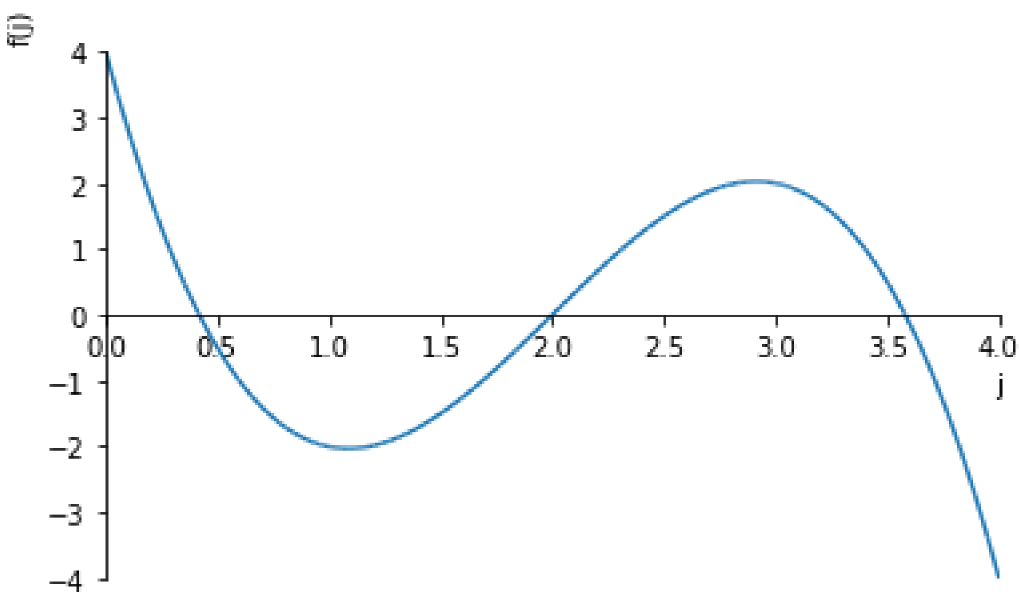
$\phi_1(j) =$
$4 - 2j$



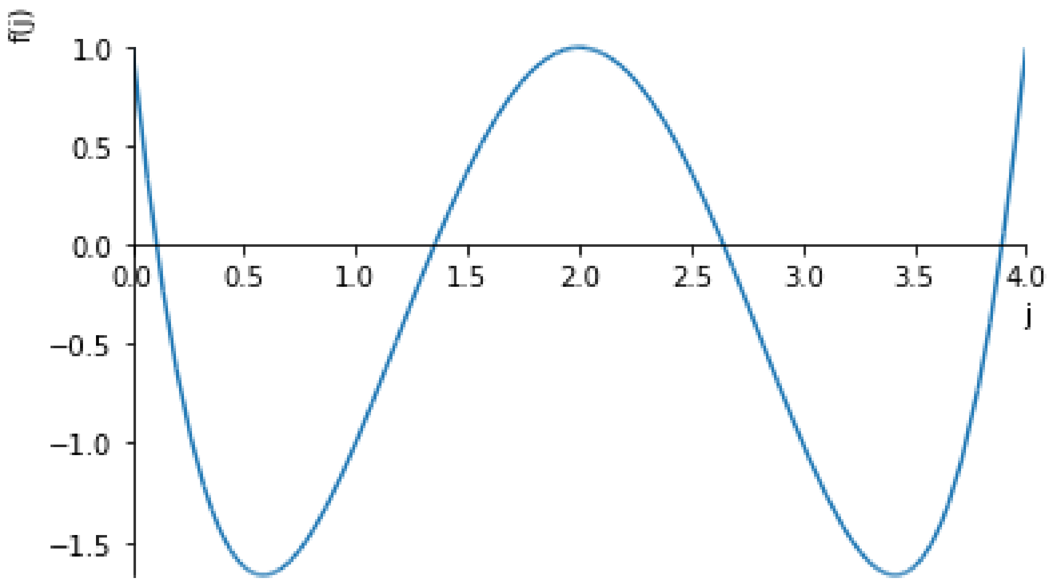
$\phi_2(j) =$
$2j^2 - 8j + 6$



$\phi_3(j) =$
$-\frac{4j^3}{3} + 8j^2 - \frac{38j}{3} + 4$

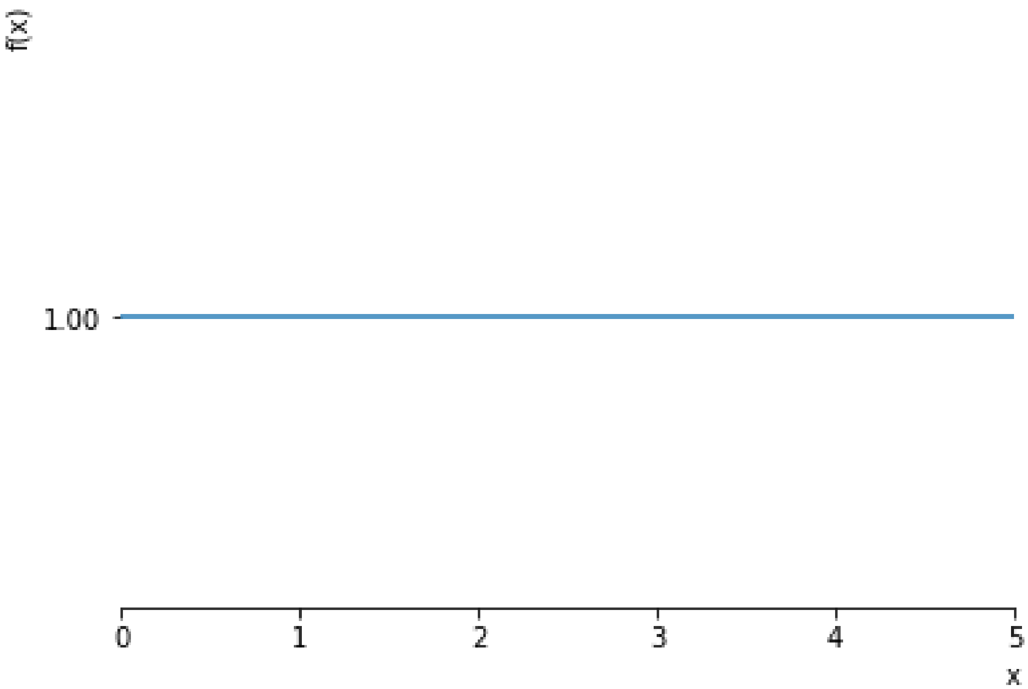


$\phi_4(j) =$
$\frac{2j^4}{3} - \frac{16j^3}{3} + \frac{40j^2}{3} - \frac{32j}{3} + 1$

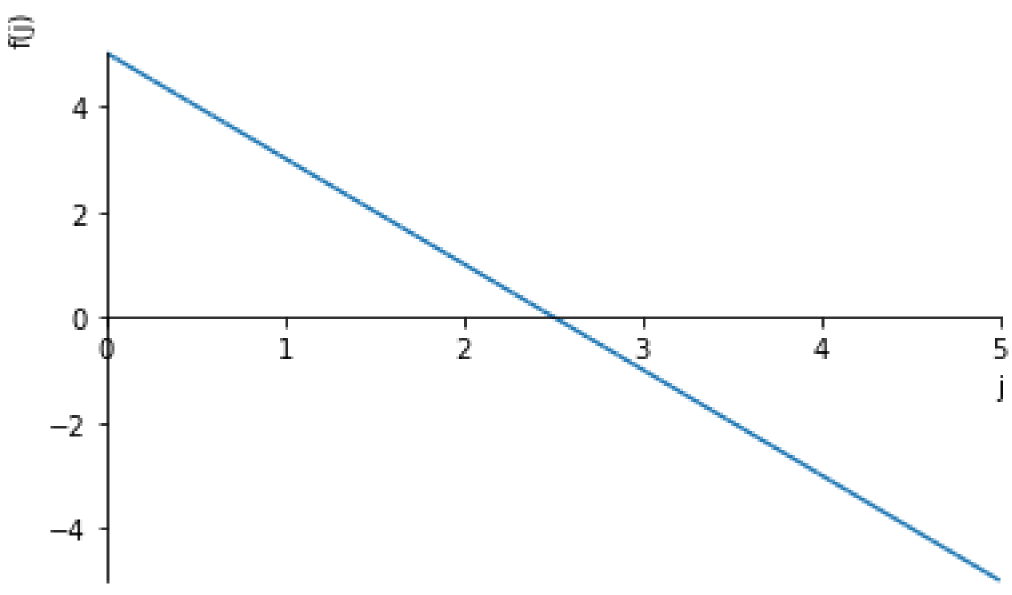


`N=5`

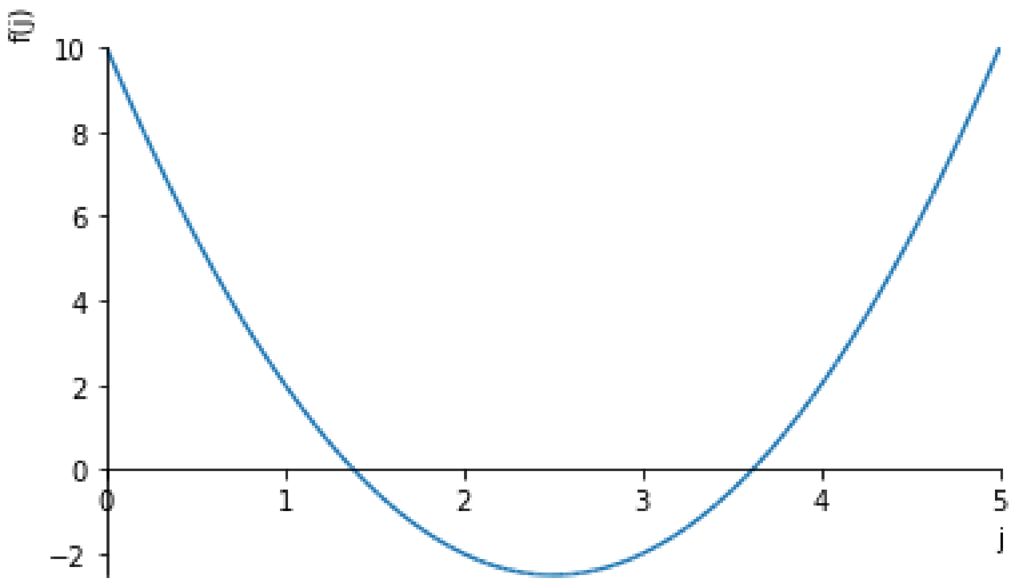
1
$5 - 2j$
$2j^2 - 10j + 10$
$-\frac{4j^3}{3} + 10j^2 - \frac{62j}{3} + 10$
$\frac{2j^4}{3} - \frac{20j^3}{3} + \frac{64j^2}{3} - \frac{70j}{3} + 5$
$-\frac{4j^5}{15} + \frac{10j^4}{3} - \frac{44j^3}{3} + \frac{80j^2}{3} - \frac{256j}{15} + 1$
$\phi_0(j) =$
1



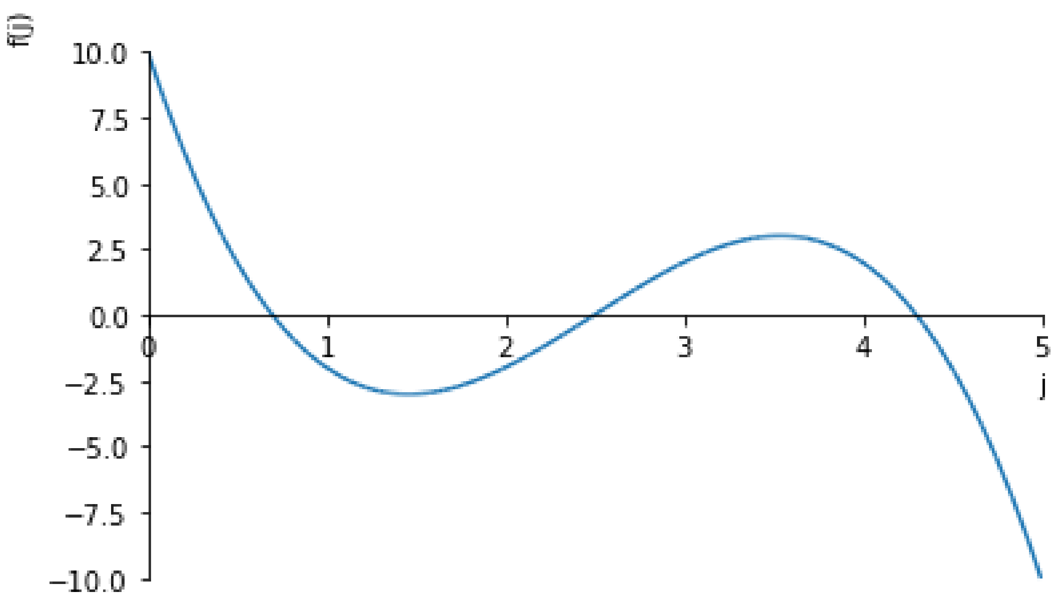
$\phi_1(j) =$
$5 - 2j$



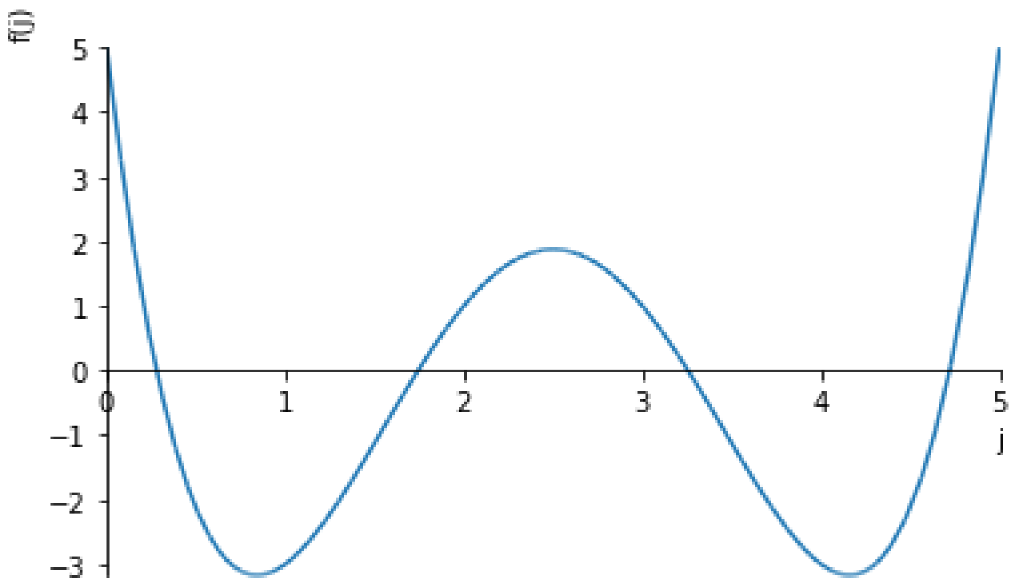
$\phi_2(j) =$
$2j^2 - 10j + 10$



$\phi_3(j) =$
$$-\frac{4j^3}{3} + 10j^2 - \frac{62j}{3} + 10$$



$\phi_4(j) =$
$$\frac{2j^4}{3} - \frac{20j^3}{3} + \frac{64j^2}{3} - \frac{70j}{3} + 5$$



$\phi_5(j) =$
$-\frac{4j^5}{15} + \frac{10j^4}{3} - \frac{44j^3}{3} + \frac{80j^2}{3} - \frac{256j}{15} + 1$