

> # Set the parameters and functions

c := 'c':

d := 'd':

u := 'u':

A3 := (18720000 c - 80956800) u⁸ + (176745600 c² - 6240000 d³ - 647654400 d) u⁷
 + (634313280 c³ - 15600000 d⁵ - 1176000 d⁴ - 2354031288 d²) u⁶ + (13520000 c⁷
 + 53931720 c⁵ + 1337989263 c⁴ - 39748800 d⁶ - 4908124242 d³) u⁵ + (19057600 c⁸
 + 1811905842 c⁵ - 1040000 d⁹ - 67326600 d⁷ - 96837975 d⁶ - 6154340220 d⁴) u⁴
 + (8818680 c⁹ + 1818349920 c⁶ - 27319303 d⁸ - 293560866 d⁷ - 4215672132 d⁵) u³
 + (4743960 c⁹ + 1236182406 c⁷ - 245815371 d⁸ - 825700176 d⁶) u² + (293412585 c⁸
 + 680615046 c⁷ - 97960200 d⁹) u + 324192756 c⁸ - 74624160 d⁹:

print(Output);

find Sturm's sequence` `

for j from 0 by 1 to 99 do

c := $\frac{401}{100} + \frac{j}{100} \cdot \left(\frac{404}{100} - \frac{401}{100} \right)$:

d := $\frac{401}{100} + \frac{j+1}{100} \cdot \left(\frac{404}{100} - \frac{401}{100} \right)$:

u := 'u':

S := sturmseq(A3, u);

signnum := sturm(S, u, 0, $\frac{55}{10}$);

with(ArrayTools) :

Slength := Size(S, 2);

X := Array(1 .. Slength);

Y := Array(1 .. Slength);

for i from 1 to Slength do

Find sgn [s_A_{3,i}(0)]

u := 0;

X[i] := signum(S[i]);

Find sgn [s_A_{3,i}(5.5)]

u := $\frac{55}{10}$:

Y[i] := signum(S[i]);

end do;

print(['a'[j], 'a'[j + 1], sgn(s['A'[3, j])(0)), sgn(s['A'[3, j])(5.5))] = [evalf(c, 5), evalf(d, 5), X,
 Y]) ;

end do:

Output

[a₀, a₁, sgn(s_A_{3,0}(0)), sgn(s_A_{3,0}(5.5))] = [4.0100, 4.0103, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]
 [a₁, a₂, sgn(s_A_{3,1}(0)), sgn(s_A_{3,1}(5.5))] = [4.0103, 4.0106, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]
 [a₂, a₃, sgn(s_A_{3,2}(0)), sgn(s_A_{3,2}(5.5))] = [4.0106, 4.0109, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]
 [a₃, a₄, sgn(s_A_{3,3}(0)), sgn(s_A_{3,3}(5.5))] = [4.0109, 4.0112, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]

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