

> # Set the parameters and functions

$c := 'c':$

$d := 'd':$

$K := (-5 d - 20) u^6 + (10 c^3 + 10 c^2 - 120 d) u^5 + (15 c^5 + 12 c^4 - 91 d^3 - 300 d^2) u^4 + (6 c^6 + 20 c^5 - 292 d^4 - 400 d^3) u^3 + (15 c^7 + 28 c^6 - 251 d^5 - 300 d^4) u^2 + (10 c^7 - 70 d^6 - 120 d^5) u - 5 d^7 - 20 d^6 :$

Computation for $i=0$

$print() ;$

$print("Compute K(5.42, a_1, a_0)");$

$c := \frac{404}{100} :$

$d := 4 :$

$u := \frac{542}{100} :$

$print(['a'[0], 'a'[1], 'K'(5.42, 'a'[1], 'a'[0]), 'sgn(K)'] = [evalf(d, 5), evalf(c, 5), evalf(K), signum(K)]) :$

Computation for $i=1,2,\dots,25$

$print() ;$

$print("Compute K(5.7, a_{i+1}, a_i) for i = 1, 2, \dots, 25");$

for i from 0 by 1 to 24 do:

$c := \frac{404}{100} + \frac{i+1}{25} \cdot \left(\frac{4103}{1000} - \frac{404}{100} \right) :$

$d := \frac{404}{100} + \frac{i}{25} \cdot \left(\frac{4103}{1000} - \frac{404}{100} \right) :$

$u := \frac{57}{10} :$

$print(['a'[1+i], 'a'[2+i], 'k'(5.7, 'a'[2+i], 'a'[1+i]), 'sgn(K)'] = [evalf(d, 5), evalf(c, 5), evalf(K), signum(K)]) :$

end do:

Computation for $i=26,27,\dots,50$

$print() ;$

$print("Compute K(5.7, a_{i+1}, a_i) for i = 26, 27, \dots, 50");$

for i from 0 by 1 to 24 do:

$c := \frac{4103}{1000} + \frac{i+1}{25} \cdot \left(\frac{4108}{1000} - \frac{4103}{1000} \right) :$

$d := \frac{4103}{1000} + \frac{i}{25} \cdot \left(\frac{4108}{1000} - \frac{4103}{1000} \right) :$

$u := \frac{57}{10} :$

$print(['a'[26+i], 'a'[27+i], 'k'(5.7, 'a'[27+i], 'a'[26+i]), 'sgn(K)'] = [evalf(d, 5), evalf(c, 5), evalf(K), signum(K)]) :$

end do:

"Compute $K(5.42, a[1], a[0])$ "

$$[a_0, a_1, K(5.42, a_1, a_0), \text{sgn}(K)] = [4., 4.0400, 2.964260642 \cdot 10^5, 1]$$

"Compute $K(5.7, a[i+1], a[i])$ for $i=1,2,\dots,25$ "

$$[a_1, a_2, k(5.7, a_2, a_1), \text{sgn}(K)] = [4.0400, 4.0425, -1.250199548 \cdot 10^6, -1]$$

$$[a_2, a_3, k(5.7, a_3, a_2), \text{sgn}(K)] = [4.0425, 4.0450, -1.201329000 \cdot 10^6, -1]$$

$$[a_3, a_4, k(5.7, a_4, a_3), \text{sgn}(K)] = [4.0450, 4.0476, -1.152214703 \cdot 10^6, -1]$$

$$[a_4, a_5, k(5.7, a_5, a_4), \text{sgn}(K)] = [4.0476, 4.0501, -1.102855890 \cdot 10^6, -1]$$

$$[a_5, a_6, k(5.7, a_6, a_5), \text{sgn}(K)] = [4.0501, 4.0526, -1.053251790 \cdot 10^6, -1]$$

$$[a_6, a_7, k(5.7, a_7, a_6), \text{sgn}(K)] = [4.0526, 4.0551, -1.003401633 \cdot 10^6, -1]$$

$$[a_7, a_8, k(5.7, a_8, a_7), \text{sgn}(K)] = [4.0551, 4.0576, -9.533046430 \cdot 10^5, -1]$$

$$[a_8, a_9, k(5.7, a_9, a_8), \text{sgn}(K)] = [4.0576, 4.0602, -9.029600468 \cdot 10^5, -1]$$

$$[a_9, a_{10}, k(5.7, a_{10}, a_9), \text{sgn}(K)] = [4.0602, 4.0627, -8.523670668 \cdot 10^5, -1]$$

$$[a_{10}, a_{11}, k(5.7, a_{11}, a_{10}), \text{sgn}(K)] = [4.0627, 4.0652, -8.015249245 \cdot 10^5, -1]$$

$$[a_{11}, a_{12}, k(5.7, a_{12}, a_{11}), \text{sgn}(K)] = [4.0652, 4.0677, -7.504328393 \cdot 10^5, -1]$$

$$[a_{12}, a_{13}, k(5.7, a_{13}, a_{12}), \text{sgn}(K)] = [4.0677, 4.0702, -6.990900290 \cdot 10^5, -1]$$

$$[a_{13}, a_{14}, k(5.7, a_{14}, a_{13}), \text{sgn}(K)] = [4.0702, 4.0728, -6.474957095 \cdot 10^5, -1]$$

$$[a_{14}, a_{15}, k(5.7, a_{15}, a_{14}), \text{sgn}(K)] = [4.0728, 4.0753, -5.956490951 \cdot 10^5, -1]$$

$$[a_{15}, a_{16}, k(5.7, a_{16}, a_{15}), \text{sgn}(K)] = [4.0753, 4.0778, -5.435493982 \cdot 10^5, -1]$$

$$[a_{16}, a_{17}, k(5.7, a_{17}, a_{16}), \text{sgn}(K)] = [4.0778, 4.0803, -4.911958294 \cdot 10^5, -1]$$

$$[a_{17}, a_{18}, k(5.7, a_{18}, a_{17}), \text{sgn}(K)] = [4.0803, 4.0828, -4.385875975 \cdot 10^5, -1]$$

$$[a_{18}, a_{19}, k(5.7, a_{19}, a_{18}), \text{sgn}(K)] = [4.0828, 4.0854, -3.857239096 \cdot 10^5, -1]$$

$$[a_{19}, a_{20}, k(5.7, a_{20}, a_{19}), \text{sgn}(K)] = [4.0854, 4.0879, -3.326039710 \cdot 10^5, -1]$$

$$[a_{20}, a_{21}, k(5.7, a_{21}, a_{20}), \text{sgn}(K)] = [4.0879, 4.0904, -2.792269851 \cdot 10^5, -1]$$

$$[a_{21}, a_{22}, k(5.7, a_{22}, a_{21}), \text{sgn}(K)] = [4.0904, 4.0929, -2.255921536 \cdot 10^5, -1]$$

$$[a_{22}, a_{23}, k(5.7, a_{23}, a_{22}), \text{sgn}(K)] = [4.0929, 4.0954, -1.716986763 \cdot 10^5, -1]$$

$$[a_{23}, a_{24}, k(5.7, a_{24}, a_{23}), \text{sgn}(K)] = [4.0954, 4.0980, -1.175457513 \cdot 10^5, -1]$$

$$[a_{24}, a_{25}, k(5.7, a_{25}, a_{24}), \text{sgn}(K)] = [4.0980, 4.1005, -63132.57489, -1]$$

$$[a_{25}, a_{26}, k(5.7, a_{26}, a_{25}), \text{sgn}(K)] = [4.1005, 4.1030, -8458.341469, -1]$$

"Compute $K(5.7, a[i+1], a[i])$ for $i=26,27,\dots,50$ "

$$[a_{26}, a_{27}, k(5.7, a_{27}, a_{26}), \text{sgn}(K)] = [4.1030, 4.1032, -1.091915612 \cdot 10^5, -1]$$

$$[a_{27}, a_{28}, k(5.7, a_{28}, a_{27}), \text{sgn}(K)] = [4.1032, 4.1034, -1.048551229 \cdot 10^5, -1]$$

$$[a_{28}, a_{29}, k(5.7, a_{29}, a_{28}), \text{sgn}(K)] = [4.1034, 4.1036, -1.005170362 \cdot 10^5, -1]$$

$$[a_{29}, a_{30}, k(5.7, a_{30}, a_{29}), \text{sgn}(K)] = [4.1036, 4.1038, -96177.30071, -1]$$

$$[a_{30}, a_{31}, k(5.7, a_{31}, a_{30}), \text{sgn}(K)] = [4.1038, 4.1040, -91835.91602, -1]$$

$$[a_{31}, a_{32}, k(5.7, a_{32}, a_{31}), \text{sgn}(K)] = [4.1040, 4.1042, -87492.88173, -1]$$

$$[a_{32}, a_{33}, k(5.7, a_{33}, a_{32}), \text{sgn}(K)] = [4.1042, 4.1044, -83148.19744, -1]$$

$$[a_{33}, a_{34}, k(5.7, a_{34}, a_{33}), \text{sgn}(K)] = [4.1044, 4.1046, -78801.86274, -1]$$

$$[a_{34}, a_{35}, k(5.7, a_{35}, a_{34}), \text{sgn}(K)] = [4.1046, 4.1048, -74453.87722, -1]$$

$$[a_{35}, a_{36}, k(5.7, a_{36}, a_{35}), \text{sgn}(K)] = [4.1048, 4.1050, -70104.24049, -1]$$

$$[a_{36}, a_{37}, k(5.7, a_{37}, a_{36}), \text{sgn}(K)] = [4.1050, 4.1052, -65752.95214, -1]$$

$$[a_{37}, a_{38}, k(5.7, a_{38}, a_{37}), \text{sgn}(K)] = [4.1052, 4.1054, -61400.01176, -1]$$

$$[a_{38}, a_{39}, k(5.7, a_{39}, a_{38}), \text{sgn}(K)] = [4.1054, 4.1056, -57045.41895, -1]$$

$$[a_{39}, a_{40}, k(5.7, a_{40}, a_{39}), \text{sgn}(K)] = [4.1056, 4.1058, -52689.17330, -1]$$

$$[a_{40}, a_{41}, k(5.7, a_{41}, a_{40}), \text{sgn}(K)] = [4.1058, 4.1060, -48331.27442, -1]$$

$$[a_{41}, a_{42}, k(5.7, a_{42}, a_{41}), \text{sgn}(K)] = [4.1060, 4.1062, -43971.72188, -1]$$

$$[a_{42}, a_{43}, k(5.7, a_{43}, a_{42}), \text{sgn}(K)] = [4.1062, 4.1064, -39610.51530, -1]$$

$$[a_{43}, a_{44}, k(5.7, a_{44}, a_{43}), \text{sgn}(K)] = [4.1064, 4.1066, -35247.65426, -1]$$

$$[a_{44}, a_{45}, k(5.7, a_{45}, a_{44}), \text{sgn}(K)] = [4.1066, 4.1068, -30883.13836, -1]$$

$$[a_{45}, a_{46}, k(5.7, a_{46}, a_{45}), \text{sgn}(K)] = [4.1068, 4.1070, -26516.96719, -1]$$

$$[a_{46}, a_{47}, k(5.7, a_{47}, a_{46}), \text{sgn}(K)] = [4.1070, 4.1072, -22149.14035, -1]$$

$$[a_{47}, a_{48}, k(5.7, a_{48}, a_{47}), \text{sgn}(K)] = [4.1072, 4.1074, -17779.65743, -1]$$

$$[a_{48}, a_{49}, k(5.7, a_{49}, a_{48}), \text{sgn}(K)] = [4.1074, 4.1076, -13408.51803, -1]$$

$$[a_{49}, a_{50}, k(5.7, a_{50}, a_{49}), \text{sgn}(K)] = [4.1076, 4.1078, -9035.721742, -1]$$

$$[a_{50}, a_{51}, k(5.7, a_{51}, a_{50}), \text{sgn}(K)] = [4.1078, 4.1080, -4661.268160, -1]$$

(1)

