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> # 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 [sA3,i(0)]
    u := 0;
    X[i] := signum(S[i]);
    # Find sgn [sA3,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

$$\begin{aligned}
[a_0, a_1, \text{sgn}(s_{A_{3,0}}(0)), \text{sgn}(s_{A_{3,0}}(5.5))] &= [4.0100, 4.0103, [1 1 1 -1 1 1 -1 -1], [1 -1 -1 1 1 1 -1 -1]] \\
[a_1, a_2, \text{sgn}(s_{A_{3,1}}(0)), \text{sgn}(s_{A_{3,1}}(5.5))] &= [4.0103, 4.0106, [1 1 1 -1 1 1 -1 -1], [1 -1 -1 1 1 1 -1 -1]] \\
[a_2, a_3, \text{sgn}(s_{A_{3,2}}(0)), \text{sgn}(s_{A_{3,2}}(5.5))] &= [4.0106, 4.0109, [1 1 1 -1 1 1 -1 -1], [1 -1 -1 1 1 1 -1 -1]] \\
[a_3, a_4, \text{sgn}(s_{A_{3,3}}(0)), \text{sgn}(s_{A_{3,3}}(5.5))] &= [4.0109, 4.0112, [1 1 1 -1 1 1 -1 -1], [1 -1 -1 1 1 1 -1 -1]]
\end{aligned}$$

$[a_4, a_5, sgn(s_{A_{3,4}}(0)), sgn(s_{A_{3,4}}(5.5))]$	$=[4.0112, 4.0115, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_5, a_6, sgn(s_{A_{3,5}}(0)), sgn(s_{A_{3,5}}(5.5))]$	$=[4.0115, 4.0118, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_6, a_7, sgn(s_{A_{3,6}}(0)), sgn(s_{A_{3,6}}(5.5))]$	$=[4.0118, 4.0121, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_7, a_8, sgn(s_{A_{3,7}}(0)), sgn(s_{A_{3,7}}(5.5))]$	$=[4.0121, 4.0124, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_8, a_9, sgn(s_{A_{3,8}}(0)), sgn(s_{A_{3,8}}(5.5))]$	$=[4.0124, 4.0127, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_9, a_{10}, sgn(s_{A_{3,9}}(0)), sgn(s_{A_{3,9}}(5.5))]$	$=[4.0127, 4.0130, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{10}, a_{11}, sgn(s_{A_{3,10}}(0)), sgn(s_{A_{3,10}}(5.5))]$	$=[4.0130, 4.0133, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{11}, a_{12}, sgn(s_{A_{3,11}}(0)), sgn(s_{A_{3,11}}(5.5))]$	$=[4.0133, 4.0136, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{12}, a_{13}, sgn(s_{A_{3,12}}(0)), sgn(s_{A_{3,12}}(5.5))]$	$=[4.0136, 4.0139, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{13}, a_{14}, sgn(s_{A_{3,13}}(0)), sgn(s_{A_{3,13}}(5.5))]$	$=[4.0139, 4.0142, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{14}, a_{15}, sgn(s_{A_{3,14}}(0)), sgn(s_{A_{3,14}}(5.5))]$	$=[4.0142, 4.0145, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{15}, a_{16}, sgn(s_{A_{3,15}}(0)), sgn(s_{A_{3,15}}(5.5))]$	$=[4.0145, 4.0148, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{16}, a_{17}, sgn(s_{A_{3,16}}(0)), sgn(s_{A_{3,16}}(5.5))]$	$=[4.0148, 4.0151, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{17}, a_{18}, sgn(s_{A_{3,17}}(0)), sgn(s_{A_{3,17}}(5.5))]$	$=[4.0151, 4.0154, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{18}, a_{19}, sgn(s_{A_{3,18}}(0)), sgn(s_{A_{3,18}}(5.5))]$	$=[4.0154, 4.0157, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{19}, a_{20}, sgn(s_{A_{3,19}}(0)), sgn(s_{A_{3,19}}(5.5))]$	$=[4.0157, 4.0160, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{20}, a_{21}, sgn(s_{A_{3,20}}(0)), sgn(s_{A_{3,20}}(5.5))]$	$=[4.0160, 4.0163, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{21}, a_{22}, sgn(s_{A_{3,21}}(0)), sgn(s_{A_{3,21}}(5.5))]$	$=[4.0163, 4.0166, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{22}, a_{23}, sgn(s_{A_{3,22}}(0)), sgn(s_{A_{3,22}}(5.5))]$	$=[4.0166, 4.0169, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{23}, a_{24}, sgn(s_{A_{3,23}}(0)), sgn(s_{A_{3,23}}(5.5))]$	$=[4.0169, 4.0172, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{24}, a_{25}, sgn(s_{A_{3,24}}(0)), sgn(s_{A_{3,24}}(5.5))]$	$=[4.0172, 4.0175, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{25}, a_{26}, sgn(s_{A_{3,25}}(0)), sgn(s_{A_{3,25}}(5.5))]$	$=[4.0175, 4.0178, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{26}, a_{27}, sgn(s_{A_{3,26}}(0)), sgn(s_{A_{3,26}}(5.5))]$	$=[4.0178, 4.0181, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{27}, a_{28}, sgn(s_{A_{3,27}}(0)), sgn(s_{A_{3,27}}(5.5))]$	$=[4.0181, 4.0184, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{28}, a_{29}, sgn(s_{A_{3,28}}(0)), sgn(s_{A_{3,28}}(5.5))]$	$=[4.0184, 4.0187, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{29}, a_{30}, sgn(s_{A_{3,29}}(0)), sgn(s_{A_{3,29}}(5.5))]$	$=[4.0187, 4.0190, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{30}, a_{31}, sgn(s_{A_{3,30}}(0)), sgn(s_{A_{3,30}}(5.5))]$	$=[4.0190, 4.0193, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{31}, a_{32}, sgn(s_{A_{3,31}}(0)), sgn(s_{A_{3,31}}(5.5))]$	$=[4.0193, 4.0196, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{32}, a_{33}, sgn(s_{A_{3,32}}(0)), sgn(s_{A_{3,32}}(5.5))]$	$=[4.0196, 4.0199, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{33}, a_{34}, sgn(s_{A_{3,33}}(0)), sgn(s_{A_{3,33}}(5.5))]$	$=[4.0199, 4.0202, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{34}, a_{35}, sgn(s_{A_{3,34}}(0)), sgn(s_{A_{3,34}}(5.5))]$	$=[4.0202, 4.0205, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$
$[a_{35}, a_{36}, sgn(s_{A_{3,35}}(0)), sgn(s_{A_{3,35}}(5.5))]$	$=[4.0205, 4.0208, [1 1 1 -1 1 1 -1 -1 -1], [1 -1 -1 1 1 1 -1 -1 -1]]$



$[a_{68}, a_{69}, sgn(s_{A_{3,68}}(0)), sgn(s_{A_{3,68}}(5.5))]$	$= [4.0304, 4.0307, [1 1 1 -1 1 1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{69}, a_{70}, sgn(s_{A_{3,69}}(0)), sgn(s_{A_{3,69}}(5.5))]$	$= [4.0307, 4.0310, [1 1 1 -1 1 1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{70}, a_{71}, sgn(s_{A_{3,70}}(0)), sgn(s_{A_{3,70}}(5.5))]$	$= [4.0310, 4.0313, [1 1 1 -1 1 1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{71}, a_{72}, sgn(s_{A_{3,71}}(0)), sgn(s_{A_{3,71}}(5.5))]$	$= [4.0313, 4.0316, [1 1 1 -1 1 1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{72}, a_{73}, sgn(s_{A_{3,72}}(0)), sgn(s_{A_{3,72}}(5.5))]$	$= [4.0316, 4.0319, [1 1 1 -1 1 1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{73}, a_{74}, sgn(s_{A_{3,73}}(0)), sgn(s_{A_{3,73}}(5.5))]$	$= [4.0319, 4.0322, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{74}, a_{75}, sgn(s_{A_{3,74}}(0)), sgn(s_{A_{3,74}}(5.5))]$	$= [4.0322, 4.0325, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{75}, a_{76}, sgn(s_{A_{3,75}}(0)), sgn(s_{A_{3,75}}(5.5))]$	$= [4.0325, 4.0328, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{76}, a_{77}, sgn(s_{A_{3,76}}(0)), sgn(s_{A_{3,76}}(5.5))]$	$= [4.0328, 4.0331, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{77}, a_{78}, sgn(s_{A_{3,77}}(0)), sgn(s_{A_{3,77}}(5.5))]$	$= [4.0331, 4.0334, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{78}, a_{79}, sgn(s_{A_{3,78}}(0)), sgn(s_{A_{3,78}}(5.5))]$	$= [4.0334, 4.0337, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{79}, a_{80}, sgn(s_{A_{3,79}}(0)), sgn(s_{A_{3,79}}(5.5))]$	$= [4.0337, 4.0340, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{80}, a_{81}, sgn(s_{A_{3,80}}(0)), sgn(s_{A_{3,80}}(5.5))]$	$= [4.0340, 4.0343, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{81}, a_{82}, sgn(s_{A_{3,81}}(0)), sgn(s_{A_{3,81}}(5.5))]$	$= [4.0343, 4.0346, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{82}, a_{83}, sgn(s_{A_{3,82}}(0)), sgn(s_{A_{3,82}}(5.5))]$	$= [4.0346, 4.0349, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{83}, a_{84}, sgn(s_{A_{3,83}}(0)), sgn(s_{A_{3,83}}(5.5))]$	$= [4.0349, 4.0352, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{84}, a_{85}, sgn(s_{A_{3,84}}(0)), sgn(s_{A_{3,84}}(5.5))]$	$= [4.0352, 4.0355, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{85}, a_{86}, sgn(s_{A_{3,85}}(0)), sgn(s_{A_{3,85}}(5.5))]$	$= [4.0355, 4.0358, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{86}, a_{87}, sgn(s_{A_{3,86}}(0)), sgn(s_{A_{3,86}}(5.5))]$	$= [4.0358, 4.0361, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{87}, a_{88}, sgn(s_{A_{3,87}}(0)), sgn(s_{A_{3,87}}(5.5))]$	$= [4.0361, 4.0364, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{88}, a_{89}, sgn(s_{A_{3,88}}(0)), sgn(s_{A_{3,88}}(5.5))]$	$= [4.0364, 4.0367, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{89}, a_{90}, sgn(s_{A_{3,89}}(0)), sgn(s_{A_{3,89}}(5.5))]$	$= [4.0367, 4.0370, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{90}, a_{91}, sgn(s_{A_{3,90}}(0)), sgn(s_{A_{3,90}}(5.5))]$	$= [4.0370, 4.0373, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{91}, a_{92}, sgn(s_{A_{3,91}}(0)), sgn(s_{A_{3,91}}(5.5))]$	$= [4.0373, 4.0376, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{92}, a_{93}, sgn(s_{A_{3,92}}(0)), sgn(s_{A_{3,92}}(5.5))]$	$= [4.0376, 4.0379, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{93}, a_{94}, sgn(s_{A_{3,93}}(0)), sgn(s_{A_{3,93}}(5.5))]$	$= [4.0379, 4.0382, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{94}, a_{95}, sgn(s_{A_{3,94}}(0)), sgn(s_{A_{3,94}}(5.5))]$	$= [4.0382, 4.0385, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{95}, a_{96}, sgn(s_{A_{3,95}}(0)), sgn(s_{A_{3,95}}(5.5))]$	$= [4.0385, 4.0388, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{96}, a_{97}, sgn(s_{A_{3,96}}(0)), sgn(s_{A_{3,96}}(5.5))]$	$= [4.0388, 4.0391, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 1 1 1 -1 -1 -1]]$
$[a_{97}, a_{98}, sgn(s_{A_{3,97}}(0)), sgn(s_{A_{3,97}}(5.5))]$	$= [4.0391, 4.0394, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 -1 1 1 -1 -1 -1]]$
$[a_{98}, a_{99}, sgn(s_{A_{3,98}}(0)), sgn(s_{A_{3,98}}(5.5))]$	$= [4.0394, 4.0397, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 -1 1 1 -1 -1 -1]]$
$[a_{99}, a_{100}, sgn(s_{A_{3,99}}(0)), sgn(s_{A_{3,99}}(5.5))]$	$= [4.0397, 4.0400, [1 1 1 -1 1 -1 -1 -1 -1], [1 1 -1 -1 1 1 -1 -1 -1]]$

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