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import math
from math import log, sqrt, cos, pi

def premier(atester):
    if atester in [0, 1]: return False
    if atester in [2, 3, 5, 7]: return True
    k = 2
    while True:
        if k * k > atester: return True
        else:
            if atester % k == 0: return False
            else: k = k + 1

def residu_quadratique(y):
    if y % 2 == 1:
        milieuplusun = 1+(y-1)/2
    else:
        milieuplusun = 1+y/2
    milieuplusun = int(milieuplusun)
    RQ = []
    for k in range(1,milieuplusun):
        RQ.append(pow(k,2) % y)
    return RQ

for n in range(3,101):
    L = residu_quadratique(n)
    print('\n',n, ' --> ', L)
    somme1 = 0.0
    somme2 = 0.0
    for x in L:
        somme1 = somme1+cos(2*pi*x/n)
    for y in range(1,n):
        if not(y in L):
            somme2 = somme2+cos(2*pi*y/n)
    print('somme1 ', somme1, ' ', 'somme2 ',somme2, 'somme1+somme2 = ',somme1+somme2)
    print('partie droite ',-0.5+0.5*sqrt(n), ' ou bien ', -0.5-0.5*sqrt(n))
    print('plus ou moins la racine ', sqrt(n))

3 --> [1]
somme1 -0.4999999999999998  somme2 -0.5000000000000004 somme1+somme2 = -
1.0000000000000002
partie droite 0.3660254037844386  ou bien -1.3660254037844386
plus ou moins la racine 1.7320508075688772

4 --> [1, 0]
somme1 1.0  somme2 -1.0000000000000002 somme1+somme2 = -2.220446049250313e-16
partie droite 0.5  ou bien -1.5
plus ou moins la racine 2.0

5 --> [1, 4]
somme1 0.6180339887498947  somme2 -1.618033988749895 somme1+somme2 = -
1.0000000000000002

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partie droite 0.6180339887498949 ou bien -1.618033988749895
plus ou moins la racine 2.23606797749979

6 --> [1, 4, 3]
somme1 -1.0000000000000004 somme2 3.3306690738754696e-16 somme1+somme2 = -1.0
partie droite 0.7247448713915889 ou bien -1.724744871391589
plus ou moins la racine 2.449489742783178

7 --> [1, 4, 2]
somme1 -0.4999999999999999 somme2 -0.5000000000000002 somme1+somme2 = -1.0
partie droite 0.8228756555322954 ou bien -1.8228756555322954
plus ou moins la racine 2.6457513110645907

8 --> [1, 4, 1, 0]
somme1 1.4142135623730951 somme2 -0.7071067811865478 somme1+somme2 =
0.7071067811865474
partie droite 0.9142135623730951 ou bien -1.9142135623730951
plus ou moins la racine 2.8284271247461903

9 --> [1, 4, 0, 7]
somme1 0.9999999999999997 somme2 -1.0000000000000004 somme1+somme2 = -
7.771561172376096e-16
partie droite 1.0 ou bien -2.0
plus ou moins la racine 3.0

10 --> [1, 4, 9, 6, 5]
somme1 -1.0 somme2 -2.220446049250313e-16 somme1+somme2 = -1.0000000000000002
partie droite 1.0811388300841898 ou bien -2.08113883008419
plus ou moins la racine 3.1622776601683795

11 --> [1, 4, 9, 5, 3]
somme1 -0.5 somme2 -0.5000000000000002 somme1+somme2 = -1.0000000000000002
partie droite 1.1583123951777 ou bien -2.1583123951777
plus ou moins la racine 3.3166247903554

12 --> [1, 4, 9, 4, 1, 0]
somme1 1.7320508075688776 somme2 -1.3660254037844393 somme1+somme2 =
0.3660254037844384
partie droite 1.2320508075688772 ou bien -2.232050807568877
plus ou moins la racine 3.4641016151377544

13 --> [1, 4, 9, 3, 12, 10]
somme1 1.3027756377319948 somme2 -2.3027756377319957 somme1+somme2 = -
1.0000000000000009
partie droite 1.3027756377319946 ou bien -2.302775637731995
plus ou moins la racine 3.605551275463989

14 --> [1, 4, 9, 2, 11, 8, 7]
somme1 -1.0000000000000001 somme2 1.1102230246251565e-16 somme1+somme2 = -
1.0000000000000009
partie droite 1.3708286933869707 ou bien -2.3708286933869704
plus ou moins la racine 3.7416573867739413

15 --> [1, 4, 9, 1, 10, 6, 4]
somme1 -0.5000000000000001 somme2 0.309016994374947 somme1+somme2 = -
0.1909830056250531
partie droite 1.4364916731037085 ou bien -2.4364916731037085
plus ou moins la racine 3.872983346207417

16 --> [1, 4, 9, 0, 9, 4, 1, 0]
somme1 2.0 somme2 -1.0000000000000004 somme1+somme2 = 0.9999999999999996
partie droite 1.5 ou bien -2.5
plus ou moins la racine 4.0

17 --> [1, 4, 9, 16, 8, 2, 15, 13]
somme1 1.5615528128088303 somme2 -2.561552812808832 somme1+somme2 = -
1.0000000000000018
partie droite 1.5615528128088303 ou bien -2.5615528128088303
plus ou moins la racine 4.123105625617661

18 --> [1, 4, 9, 16, 7, 0, 13, 10, 9]
somme1 -0.9999999999999998 somme2 -1.1102230246251565e-15 somme1+somme2 = -
1.0000000000000009
partie droite 1.6213203435596424 ou bien -2.6213203435596424
plus ou moins la racine 4.242640687119285

19 --> [1, 4, 9, 16, 6, 17, 11, 7, 5]
somme1 -0.4999999999999998 somme2 -0.5000000000000006 somme1+somme2 = -
1.0000000000000004
partie droite 1.679449471770337 ou bien -2.679449471770337
plus ou moins la racine 4.358898943540674

20 --> [1, 4, 9, 16, 5, 16, 9, 4, 1, 0]
somme1 2.23606797749979 somme2 -1.618033988749895 somme1+somme2 =
0.6180339887498949
partie droite 1.7360679774997898 ou bien -2.73606797749979
plus ou moins la racine 4.47213595499958

21 --> [1, 4, 9, 16, 4, 15, 7, 1, 18, 16]
somme1 1.7912878474779201 somme2 -1.3956439237389602 somme1+somme2 =
0.39564392373895996
partie droite 1.79128784747792 ou bien -2.79128784747792
plus ou moins la racine 4.58257569495584

22 --> [1, 4, 9, 16, 3, 14, 5, 20, 15, 12, 11]
somme1 -1.0000000000000001 somme2 -1.2212453270876722e-15 somme1+somme2 = -
1.0000000000000022
partie droite 1.8452078799117149 ou bien -2.845207879911715
plus ou moins la racine 4.69041575982343

23 --> [1, 4, 9, 16, 2, 13, 3, 18, 12, 8, 6]
somme1 -0.5000000000000001 somme2 -0.5000000000000001 somme1+somme2 = -
1.0000000000000002
partie droite 1.8979157616563596 ou bien -2.8979157616563596

plus ou moins la racine 4.795831523312719

24 --> [1, 4, 9, 16, 1, 12, 1, 16, 9, 4, 1, 0]

somme1 2.449489742783178 somme2 -0.2588190451025222 somme1+somme2 =
2.190670697680656

partie droite 1.9494897427831779 ou bien -2.949489742783178

plus ou moins la racine 4.898979485566356

25 --> [1, 4, 9, 16, 0, 11, 24, 14, 6, 0, 21, 19]

somme1 1.9999999999999996 somme2 -1.0000000000000009 somme1+somme2 =
0.9999999999999987

partie droite 2.0 ou bien -3.0

plus ou moins la racine 5.0

26 --> [1, 4, 9, 16, 25, 10, 23, 12, 3, 22, 17, 14, 13]

somme1 -1.0000000000000018 somme2 -6.661338147750939e-16 somme1+somme2 = -
1.0000000000000024

partie droite 2.0495097567963922 ou bien -3.0495097567963922

plus ou moins la racine 5.0990195135927845

27 --> [1, 4, 9, 16, 25, 9, 22, 10, 0, 19, 13, 9, 7]

somme1 -0.4999999999999998 somme2 -0.5000000000000004 somme1+somme2 = -
1.0000000000000002

partie droite 2.098076211353316 ou bien -3.098076211353316

plus ou moins la racine 5.196152422706632

28 --> [1, 4, 9, 16, 25, 8, 21, 8, 25, 16, 9, 4, 1, 0]

somme1 2.6457513110645907 somme2 -1.8228756555322954 somme1+somme2 =
0.8228756555322954

partie droite 2.1457513110645907 ou bien -3.1457513110645907

plus ou moins la racine 5.291502622129181

29 --> [1, 4, 9, 16, 25, 7, 20, 6, 23, 13, 5, 28, 24, 22]

somme1 2.192582403567251 somme2 -3.1925824035672523 somme1+somme2 = -
1.0000000000000013

partie droite 2.192582403567252 ou bien -3.192582403567252

plus ou moins la racine 5.385164807134504

30 --> [1, 4, 9, 16, 25, 6, 19, 4, 21, 10, 1, 24, 19, 16, 15]

somme1 -1.0000000000000004 somme2 -1.1102230246251565e-15 somme1+somme2 = -
1.0000000000000016

partie droite 2.2386127875258306 ou bien -3.2386127875258306

plus ou moins la racine 5.477225575051661

31 --> [1, 4, 9, 16, 25, 5, 18, 2, 19, 7, 28, 20, 14, 10, 8]

somme1 -0.5000000000000001 somme2 -0.5000000000000013 somme1+somme2 = -
1.0000000000000013

partie droite 2.2838821814150108 ou bien -3.2838821814150108

plus ou moins la racine 5.5677643628300215

32 --> [1, 4, 9, 16, 25, 4, 17, 0, 17, 4, 25, 16, 9, 4, 1, 0]

somme1 2.8284271247461907 somme2 -0.7071067811865493 somme1+somme2 =
2.1213203435596415
partie droite 2.3284271247461903 ou bien -3.3284271247461903
plus ou moins la racine 5.656854249492381

33 --> [1, 4, 9, 16, 25, 3, 16, 31, 15, 1, 22, 12, 4, 31, 27, 25]
somme1 2.3722813232690134 somme2 -1.6861406616345076 somme1+somme2 =
0.6861406616345058
partie droite 2.3722813232690143 ou bien -3.3722813232690143
plus ou moins la racine 5.744562646538029

34 --> [1, 4, 9, 16, 25, 2, 15, 30, 13, 32, 19, 8, 33, 26, 21, 18, 17]
somme1 -0.9999999999999999 somme2 -1.9984014443252818e-15 somme1+somme2 = -
1.00000000000000018
partie droite 2.4154759474226504 ou bien -3.4154759474226504
plus ou moins la racine 5.830951894845301

35 --> [1, 4, 9, 16, 25, 1, 14, 29, 11, 30, 16, 4, 29, 21, 15, 11, 9]
somme1 -0.4999999999999993 somme2 0.3090169943749467 somme1+somme2 = -
0.1909830056250526
partie droite 2.458039891549808 ou bien -3.458039891549808
plus ou moins la racine 5.916079783099616

36 --> [1, 4, 9, 16, 25, 0, 13, 28, 9, 28, 13, 0, 25, 16, 9, 4, 1, 0]
somme1 2.9999999999999996 somme2 -1.0000000000000009 somme1+somme2 =
1.9999999999999987
partie droite 2.5 ou bien -3.5
plus ou moins la racine 6.0

37 --> [1, 4, 9, 16, 25, 36, 12, 27, 7, 26, 10, 33, 21, 11, 3, 34, 30, 28]
somme1 2.5413812651491092 somme2 -3.54138126514911 somme1+somme2 = -
1.0000000000000009
partie droite 2.5413812651491097 ou bien -3.5413812651491097
plus ou moins la racine 6.082762530298219

38 --> [1, 4, 9, 16, 25, 36, 11, 26, 5, 24, 7, 30, 17, 6, 35, 28, 23, 20, 19]
somme1 -1.0000000000000009 somme2 1.1102230246251565e-16 somme1+somme2 = -
1.0000000000000009
partie droite 2.582207001484488 ou bien -3.582207001484488
plus ou moins la racine 6.164414002968976

39 --> [1, 4, 9, 16, 25, 36, 10, 25, 3, 22, 4, 27, 13, 1, 30, 22, 16, 12, 10]
somme1 -0.5000000000000007 somme2 -1.1513878188659983 somme1+somme2 = -
1.651387818865999
partie droite 2.622498999199199 ou bien -3.622498999199199
plus ou moins la racine 6.244997998398398

40 --> [1, 4, 9, 16, 25, 36, 9, 24, 1, 20, 1, 24, 9, 36, 25, 16, 9, 4, 1, 0]
somme1 3.1622776601683795 somme2 -0.4370160244488216 somme1+somme2 =
2.725261635719558
partie droite 2.6622776601683795 ou bien -3.6622776601683795
plus ou moins la racine 6.324555320336759

41 --> [1, 4, 9, 16, 25, 36, 8, 23, 40, 18, 39, 21, 5, 32, 20, 10, 2, 37, 33, 31]
somme1 2.7015621187164243 somme2 -3.7015621187164265 somme1+somme2 = -
1.0000000000000022
partie droite 2.7015621187164243 ou bien -3.7015621187164243
plus ou moins la racine 6.4031242374328485

42 --> [1, 4, 9, 16, 25, 36, 7, 22, 39, 16, 37, 18, 1, 28, 15, 4, 37, 30, 25, 22, 21]
somme1 -1.0000000000000004 somme2 4.440892098500626e-16 somme1+somme2 = -1.0
partie droite 2.74037034920393 ou bien -3.74037034920393
plus ou moins la racine 6.48074069840786

43 --> [1, 4, 9, 16, 25, 36, 6, 21, 38, 14, 35, 15, 40, 24, 10, 41, 31, 23, 17, 13, 11]
somme1 -0.5000000000000009 somme2 -0.5000000000000006 somme1+somme2 = -
1.0000000000000013
partie droite 2.778719262151 ou bien -3.778719262151
plus ou moins la racine 6.557438524302

44 --> [1, 4, 9, 16, 25, 36, 5, 20, 37, 12, 33, 12, 37, 20, 5, 36, 25, 16, 9, 4, 1, 0]
somme1 3.3166247903554003 somme2 -2.158312395177699 somme1+somme2 =
1.1583123951777012
partie droite 2.8166247903554 ou bien -3.8166247903554
plus ou moins la racine 6.6332495807108

45 --> [1, 4, 9, 16, 25, 36, 4, 19, 36, 10, 31, 9, 34, 16, 0, 31, 19, 9, 1, 40, 36, 34]
somme1 2.8541019662496843 somme2 -1.6180339887498967 somme1+somme2 =
1.2360679774997876
partie droite 2.8541019662496847 ou bien -3.8541019662496847
plus ou moins la racine 6.708203932499369

46 --> [1, 4, 9, 16, 25, 36, 3, 18, 35, 8, 29, 6, 31, 12, 41, 26, 13, 2, 39, 32, 27, 24, 23]
somme1 -1.0000000000000009 somme2 8.881784197001252e-16 somme1+somme2 = -1.0
partie droite 2.891164991562634 ou bien -3.891164991562634
plus ou moins la racine 6.782329983125268

47 --> [1, 4, 9, 16, 25, 36, 2, 17, 34, 6, 27, 3, 28, 8, 37, 21, 7, 42, 32, 24, 18, 14, 12]
somme1 -0.4999999999999999 somme2 -0.5000000000000017 somme1+somme2 = -
1.0000000000000016
partie droite 2.927827300200522 ou bien -3.927827300200522
plus ou moins la racine 6.855654600401044

48 --> [1, 4, 9, 16, 25, 36, 1, 16, 33, 4, 25, 0, 25, 4, 33, 16, 1, 36, 25, 16, 9, 4, 1, 0]
somme1 3.4641016151377557 somme2 -1.3660254037844402 somme1+somme2 =
2.0980762113533156
partie droite 2.9641016151377544 ou bien -3.9641016151377544
plus ou moins la racine 6.928203230275509

49 --> [1, 4, 9, 16, 25, 36, 0, 15, 32, 2, 23, 46, 22, 0, 29, 11, 44, 30, 18, 8, 0, 43, 39, 37]
somme1 2.9999999999999987 somme2 -1.0000000000000013 somme1+somme2 =
1.9999999999999973
partie droite 3.0 ou bien -4.0
plus ou moins la racine 7.0

58 --> [1, 4, 9, 16, 25, 36, 49, 6, 23, 42, 5, 28, 53, 22, 51, 24, 57, 34, 13, 52, 35, 20, 7, 54, 45, 38, 33, 30, 29]

somme1 -1.0000000000000004 somme2 -2.4424906541753444e-15 somme1+somme2 = -1.00000000000000029

partie droite 3.3078865529319543 ou bien -4.307886552931954

plus ou moins la racine 7.615773105863909

59 --> [1, 4, 9, 16, 25, 36, 49, 5, 22, 41, 3, 26, 51, 19, 48, 20, 53, 29, 7, 46, 28, 12, 57, 45, 35, 27, 21, 17, 15]

somme1 -0.50000000000000026 somme2 -0.5000000000000009 somme1+somme2 = -1.00000000000000036

partie droite 3.340572873934304 ou bien -4.340572873934304

plus ou moins la racine 7.681145747868608

60 --> [1, 4, 9, 16, 25, 36, 49, 4, 21, 40, 1, 24, 49, 16, 45, 16, 49, 24, 1, 40, 21, 4, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 3.8729833462074144 somme2 -0.22621614028468806 somme1+somme2 = 3.6467672059227265

partie droite 3.372983346207417 ou bien -4.372983346207417

plus ou moins la racine 7.745966692414834

61 --> [1, 4, 9, 16, 25, 36, 49, 3, 20, 39, 60, 22, 47, 13, 42, 12, 45, 19, 56, 34, 14, 57, 41, 27, 15, 5, 58, 52, 48, 46]

somme1 3.405124837953325 somme2 -4.40512483795333 somme1+somme2 = -1.00000000000000044

partie droite 3.405124837953327 ou bien -4.405124837953327

plus ou moins la racine 7.810249675906654

62 --> [1, 4, 9, 16, 25, 36, 49, 2, 19, 38, 59, 20, 45, 10, 39, 8, 41, 14, 51, 28, 7, 50, 33, 18, 5, 56, 47, 40, 35, 32, 31]

somme1 -1.00000000000000016 somme2 -2.1094237467877974e-15 somme1+somme2 = -1.00000000000000036

partie droite 3.4370039370059056 ou bien -4.437003937005906

plus ou moins la racine 7.874007874011811

63 --> [1, 4, 9, 16, 25, 36, 49, 1, 18, 37, 58, 18, 43, 7, 36, 4, 37, 9, 46, 22, 0, 43, 25, 9, 58, 46, 36, 28, 22, 18, 16]

somme1 -0.50000000000000007 somme2 -0.50000000000000024 somme1+somme2 = -1.0000000000000003

partie droite 3.468626966596886 ou bien -4.468626966596886

plus ou moins la racine 7.937253933193772

64 --> [1, 4, 9, 16, 25, 36, 49, 0, 17, 36, 57, 16, 41, 4, 33, 0, 33, 4, 41, 16, 57, 36, 17, 0, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 3.9999999999999964 somme2 -1.0000000000000002 somme1+somme2 = 2.9999999999999964

partie droite 3.5 ou bien -4.5

plus ou moins la racine 8.0

65 --> [1, 4, 9, 16, 25, 36, 49, 64, 16, 35, 56, 14, 39, 1, 30, 61, 29, 64, 36, 10, 51, 29, 9, 56, 40, 26, 14, 4, 61, 55, 51, 49]

somme1 3.531128874149274 somme2 -0.8051596238336931 somme1+somme2 =
2.725969250315581
partie droite 3.5311288741492746 ou bien -4.531128874149275
plus ou moins la racine 8.06225774829855

66 --> [1, 4, 9, 16, 25, 36, 49, 64, 15, 34, 55, 12, 37, 64, 27, 58, 25, 60, 31, 4, 45, 22, 1, 48, 31, 16,
3, 58, 49, 42, 37, 34, 33]
somme1 -0.9999999999999994 somme2 -3.3306690738754696e-15 somme1+somme2 = -
1.00000000000000027
partie droite 3.5620192023179804 ou bien -4.56201920231798
plus ou moins la racine 8.12403840463596

67 --> [1, 4, 9, 16, 25, 36, 49, 64, 14, 33, 54, 10, 35, 62, 24, 55, 21, 56, 26, 65, 39, 15, 60, 40, 22,
6, 59, 47, 37, 29, 23, 19, 17]
somme1 -0.50000000000000013 somme2 -0.50000000000000031 somme1+somme2 = -
1.00000000000000044
partie droite 3.592676385936225 ou bien -4.592676385936225
plus ou moins la racine 8.18535277187245

68 --> [1, 4, 9, 16, 25, 36, 49, 64, 13, 32, 53, 8, 33, 60, 21, 52, 17, 52, 21, 60, 33, 8, 53, 32, 13, 64,
49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.123105625617659 somme2 -2.56155281280883 somme1+somme2 =
1.561552812808829
partie droite 3.6231056256176606 ou bien -4.623105625617661
plus ou moins la racine 8.246211251235321

69 --> [1, 4, 9, 16, 25, 36, 49, 64, 12, 31, 52, 6, 31, 58, 18, 49, 13, 48, 16, 55, 27, 1, 46, 24, 4, 55,
39, 25, 13, 3, 64, 58, 54, 52]
somme1 3.6533119314590365 somme2 -2.326655965729522 somme1+somme2 =
1.3266559657295147
partie droite 3.6533119314590374 ou bien -4.653311931459037
plus ou moins la racine 8.306623862918075

70 --> [1, 4, 9, 16, 25, 36, 49, 64, 11, 30, 51, 4, 29, 56, 15, 46, 9, 44, 11, 50, 21, 64, 39, 16, 65, 46,
29, 14, 1, 60, 51, 44, 39, 36, 35]
somme1 -1.00000000000000016 somme2 -2.220446049250313e-16 somme1+somme2 = -
1.00000000000000018
partie droite 3.683300132670378 ou bien -4.683300132670378
plus ou moins la racine 8.366600265340756

71 --> [1, 4, 9, 16, 25, 36, 49, 64, 10, 29, 50, 2, 27, 54, 12, 43, 5, 40, 6, 45, 15, 58, 32, 8, 57, 37,
19, 3, 60, 48, 38, 30, 24, 20, 18]
somme1 -0.50000000000000004 somme2 -0.499999999999999999 somme1+somme2 = -
1.00000000000000004
partie droite 3.7130748865881795 ou bien -4.7130748865881795
plus ou moins la racine 8.426149773176359

72 --> [1, 4, 9, 16, 25, 36, 49, 64, 9, 28, 49, 0, 25, 52, 9, 40, 1, 36, 1, 40, 9, 52, 25, 0, 49, 28, 9, 64,
49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.242640687119283 somme2 -0.7071067811865477 somme1+somme2 =
3.535533905932735
partie droite 3.7426406871192848 ou bien -4.742640687119285

plus ou moins la racine 8.48528137423857

73 --> [1, 4, 9, 16, 25, 36, 49, 64, 8, 27, 48, 71, 23, 50, 6, 37, 70, 32, 69, 35, 3, 46, 18, 65, 41, 19, 72, 54, 38, 24, 12, 2, 67, 61, 57, 55]

somme1 3.772001872658764 somme2 -4.772001872658769 somme1+somme2 = -
1.0000000000000049

partie droite 3.772001872658765 ou bien -4.772001872658765

plus ou moins la racine 8.54400374531753

74 --> [1, 4, 9, 16, 25, 36, 49, 64, 7, 26, 47, 70, 21, 48, 3, 34, 67, 28, 65, 30, 71, 40, 11, 58, 33, 10, 63, 44, 27, 12, 73, 62, 53, 46, 41, 38, 37]

somme1 -1.0000000000000009 somme2 -2.1094237467877974e-15 somme1+somme2 = -
1.0000000000000003

partie droite 3.8011626335213133 ou bien -4.801162633521313

plus ou moins la racine 8.602325267042627

75 --> [1, 4, 9, 16, 25, 36, 49, 64, 6, 25, 46, 69, 19, 46, 0, 31, 64, 24, 61, 25, 66, 34, 4, 51, 25, 1, 54, 34, 16, 0, 61, 49, 39, 31, 25, 21, 19]

somme1 -0.5000000000000038 somme2 -0.4999999999999988 somme1+somme2 = -
1.0000000000000027

partie droite 3.8301270189221936 ou bien -4.830127018922194

plus ou moins la racine 8.660254037844387

76 --> [1, 4, 9, 16, 25, 36, 49, 64, 5, 24, 45, 68, 17, 44, 73, 28, 61, 20, 57, 20, 61, 28, 73, 44, 17, 68, 45, 24, 5, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 4.358898943540672 somme2 -2.6794494717703348 somme1+somme2 =
1.6794494717703374

partie droite 3.858898943540674 ou bien -4.858898943540674

plus ou moins la racine 8.717797887081348

77 --> [1, 4, 9, 16, 25, 36, 49, 64, 4, 23, 44, 67, 15, 42, 71, 25, 58, 16, 53, 15, 56, 22, 67, 37, 9, 60, 36, 14, 71, 53, 37, 23, 11, 1, 70, 64, 60, 58]

somme1 3.8874821936960586 somme2 -2.4437410968480333 somme1+somme2 =
1.4437410968480253

partie droite 3.8874821936960613 ou bien -4.887482193696061

plus ou moins la racine 8.774964387392123

78 --> [1, 4, 9, 16, 25, 36, 49, 64, 3, 22, 43, 66, 13, 40, 69, 22, 55, 12, 49, 10, 51, 16, 61, 30, 1, 52, 27, 4, 61, 42, 25, 10, 75, 64, 55, 48, 43, 40, 39]

somme1 -1.0000000000000007 somme2 -3.885780586188048e-15 somme1+somme2 = -
1.0000000000000044

partie droite 3.915880433163924 ou bien -4.915880433163924

plus ou moins la racine 8.831760866327848

79 --> [1, 4, 9, 16, 25, 36, 49, 64, 2, 21, 42, 65, 11, 38, 67, 19, 52, 8, 45, 5, 46, 10, 55, 23, 72, 44, 18, 73, 51, 31, 13, 76, 62, 50, 40, 32, 26, 22, 20]

somme1 -0.5000000000000014 somme2 -0.5000000000000004 somme1+somme2 = -
1.0000000000000018

partie droite 3.9440972086577943 ou bien -4.944097208657794

plus ou moins la racine 8.888194417315589

80 --> [1, 4, 9, 16, 25, 36, 49, 64, 1, 20, 41, 64, 9, 36, 65, 16, 49, 4, 41, 0, 41, 4, 49, 16, 65, 36, 9, 64, 41, 20, 1, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.472135954999576 somme2 -1.6180339887498971 somme1+somme2 =
2.854101966249679
partie droite 3.9721359549995796 ou bien -4.97213595499958
plus ou moins la racine 8.94427190999916

81 --> [1, 4, 9, 16, 25, 36, 49, 64, 0, 19, 40, 63, 7, 34, 63, 13, 46, 0, 37, 76, 36, 79, 43, 9, 58, 28, 0, 55, 31, 9, 70, 52, 36, 22, 10, 0, 73, 67, 63, 61]
somme1 3.9999999999999996 somme2 -1.0000000000000044 somme1+somme2 =
2.999999999999995
partie droite 4.0 ou bien -5.0
plus ou moins la racine 9.0

82 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 18, 39, 62, 5, 32, 61, 10, 43, 78, 33, 72, 31, 74, 37, 2, 51, 20, 73, 46, 21, 80, 59, 40, 23, 8, 77, 66, 57, 50, 45, 42, 41]
somme1 -1.0000000000000002 somme2 -3.219646771412954e-15 somme1+somme2 = -
1.0000000000000053
partie droite 4.027692569068709 ou bien -5.027692569068709
plus ou moins la racine 9.055385138137417

83 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 17, 38, 61, 3, 30, 59, 7, 40, 75, 29, 68, 26, 69, 31, 78, 44, 12, 65, 37, 11, 70, 48, 28, 10, 77, 63, 51, 41, 33, 27, 23, 21]
somme1 -0.5000000000000001 somme2 -0.5000000000000026 somme1+somme2 = -
1.0000000000000036
partie droite 4.05521678957215 ou bien -5.05521678957215
plus ou moins la racine 9.1104335791443

84 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 16, 37, 60, 1, 28, 57, 4, 37, 72, 25, 64, 21, 64, 25, 72, 37, 4, 57, 28, 1, 60, 37, 16, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.582575694955837 somme2 -1.6240690496128884 somme1+somme2 =
2.9585066453429487
partie droite 4.08257569495584 ou bien -5.08257569495584
plus ou moins la racine 9.16515138991168

85 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 15, 36, 59, 84, 26, 55, 1, 34, 69, 21, 60, 16, 59, 19, 66, 30, 81, 49, 19, 76, 50, 26, 4, 69, 51, 35, 21, 9, 84, 76, 70, 66, 64]
somme1 4.109772228646442 somme2 -0.9650927135438615 somme1+somme2 =
3.14467951510258
partie droite 4.1097722286464435 ou bien -5.1097722286464435
plus ou moins la racine 9.219544457292887

86 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 14, 35, 58, 83, 24, 53, 84, 31, 66, 17, 56, 11, 54, 13, 60, 23, 74, 41, 10, 67, 40, 15, 78, 57, 38, 21, 6, 79, 68, 59, 52, 47, 44, 43]
somme1 -1.0000000000000009 somme2 -3.3306690738754696e-16 somme1+somme2 = -
1.0000000000000013
partie droite 4.136809247747852 ou bien -5.136809247747852
plus ou moins la racine 9.273618495495704

87 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 13, 34, 57, 82, 22, 51, 82, 28, 63, 13, 52, 6, 49, 7, 54, 16, 67, 33, 1, 58, 30, 4, 67, 45, 25, 7, 78, 64, 52, 42, 34, 28, 24, 22]

somme1 -0.50000000000000018 somme2 1.0962912017836253 somme1+somme2 =
0.5962912017836235
partie droite 4.163689526544408 ou bien -5.163689526544408
plus ou moins la racine 9.327379053088816

88 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 12, 33, 56, 81, 20, 49, 80, 25, 60, 9, 48, 1, 44, 1, 48, 9, 60,
25, 80, 49, 20, 81, 56, 33, 12, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.690415759823427 somme2 -0.8190505493625879 somme1+somme2 =
3.871365210460839
partie droite 4.19041575982343 ou bien -5.19041575982343
plus ou moins la racine 9.38083151964686

89 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 11, 32, 55, 80, 18, 47, 78, 22, 57, 5, 44, 85, 39, 84, 42, 2, 53,
17, 72, 40, 10, 71, 45, 21, 88, 68, 50, 34, 20, 8, 87, 79, 73, 69, 67]
somme1 4.2169905660283 somme2 -5.216990566028301 somme1+somme2 = -
1.0000000000000009
partie droite 4.216990566028302 ou bien -5.216990566028302
plus ou moins la racine 9.433981132056603

90 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 10, 31, 54, 79, 16, 45, 76, 19, 54, 1, 40, 81, 34, 79, 36, 85,
46, 9, 64, 31, 0, 61, 34, 9, 76, 55, 36, 19, 4, 81, 70, 61, 54, 49, 46, 45]
somme1 -1.0000000000000003 somme2 -8.881784197001252e-16 somme1+somme2 = -
1.0000000000000004
partie droite 4.243416490252569 ou bien -5.243416490252569
plus ou moins la racine 9.486832980505138

91 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 9, 30, 53, 78, 14, 43, 74, 16, 51, 88, 36, 77, 29, 74, 30, 79,
39, 1, 56, 22, 81, 51, 23, 88, 64, 42, 22, 4, 79, 65, 53, 43, 35, 29, 25, 23]
somme1 -0.50000000000000013 somme2 0.6513878188659966 somme1+somme2 =
0.15138781886599528
partie droite 4.269696007084728 ou bien -5.269696007084728
plus ou moins la racine 9.539392014169456

92 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 8, 29, 52, 77, 12, 41, 72, 13, 48, 85, 32, 73, 24, 69, 24, 73,
32, 85, 48, 13, 72, 41, 12, 77, 52, 29, 8, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 4.795831523312717 somme2 -2.897915761656358 somme1+somme2 =
1.8979157616563596
partie droite 4.295831523312719 ou bien -5.295831523312719
plus ou moins la racine 9.591663046625438

93 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 7, 28, 51, 76, 10, 39, 70, 10, 45, 82, 28, 69, 19, 64, 18, 67,
25, 78, 40, 4, 63, 31, 1, 66, 40, 16, 87, 67, 49, 33, 19, 7, 90, 82, 76, 72, 70]
somme1 4.321825380496476 somme2 -2.660912690248241 somme1+somme2 =
1.6609126902482347
partie droite 4.3218253804964775 ou bien -5.3218253804964775
plus ou moins la racine 9.643650760992955

94 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 6, 27, 50, 75, 8, 37, 68, 7, 42, 79, 24, 65, 14, 59, 12, 61, 18,
71, 32, 89, 54, 21, 84, 55, 28, 3, 74, 53, 34, 17, 2, 83, 72, 63, 56, 51, 48, 47]
somme1 -0.9999999999999997 somme2 -6.217248937900877e-15 somme1+somme2 = -
1.00000000000000058
partie droite 4.347679857416329 ou bien -5.347679857416329

plus ou moins la racine 9.695359714832659

95 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 5, 26, 49, 74, 6, 35, 66, 4, 39, 76, 20, 61, 9, 54, 6, 55, 11, 64, 24, 81, 45, 11, 74, 44, 16, 85, 61, 39, 19, 1, 80, 66, 54, 44, 36, 30, 26, 24]

somme1 -0.49999999999999895 somme2 -0.8090169943749511 somme1+somme2 = -
1.3090169943749501

partie droite 4.373397172404482 ou bien -5.373397172404482

plus ou moins la racine 9.746794344808963

96 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 4, 25, 48, 73, 4, 33, 64, 1, 36, 73, 16, 57, 4, 49, 0, 49, 4, 57, 16, 73, 36, 1, 64, 33, 4, 73, 48, 25, 4, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 4.89897948556635 somme2 -0.25881904510252274 somme1+somme2 =
4.640160440463828

partie droite 4.398979485566356 ou bien -5.398979485566356

plus ou moins la racine 9.797958971132712

97 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 3, 24, 47, 72, 2, 31, 62, 95, 33, 70, 12, 53, 96, 44, 91, 43, 94, 50, 8, 65, 27, 88, 54, 22, 89, 61, 35, 11, 86, 66, 48, 32, 18, 6, 93, 85, 79, 75, 73]

somme1 4.424428900898049 somme2 -5.424428900898051 somme1+somme2 = -
1.0000000000000018

partie droite 4.424428900898052 ou bien -5.424428900898052

plus ou moins la racine 9.848857801796104

98 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 2, 23, 46, 71, 0, 29, 60, 93, 30, 67, 8, 49, 92, 39, 86, 37, 88, 43, 0, 57, 18, 79, 44, 11, 78, 49, 22, 95, 72, 51, 32, 15, 0, 85, 74, 65, 58, 53, 50, 49]

somme1 -1.0000000000000016 somme2 -1.7763568394002505e-15 somme1+somme2 = -
1.0000000000000033

partie droite 4.449747468305833 ou bien -5.449747468305833

plus ou moins la racine 9.899494936611665

99 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 1, 22, 45, 70, 97, 27, 58, 91, 27, 64, 4, 45, 88, 34, 81, 31, 82, 36, 91, 49, 9, 70, 34, 0, 67, 37, 9, 82, 58, 36, 16, 97, 81, 67, 55, 45, 37, 31, 27, 25]

somme1 -0.5000000000000026 somme2 -0.4999999999999956 somme1+somme2 = -
1.0000000000000022

partie droite 4.4749371855331 ou bien -5.4749371855331

plus ou moins la racine 9.9498743710662

100 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 0, 21, 44, 69, 96, 25, 56, 89, 24, 61, 0, 41, 84, 29, 76, 25, 76, 29, 84, 41, 0, 61, 24, 89, 56, 25, 96, 69, 44, 21, 0, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 5.0 somme2 -1.0000000000000098 somme1+somme2 = 3.9999999999999902

partie droite 4.5 ou bien -5.5

plus ou moins la racine 10.0

```

import math
from math import log, sqrt, cos, sin, pi

def premier(atester):
    if atester in [0, 1]: return False
    if atester in [2, 3, 5, 7]: return True
    k = 2
    while True:
        if k * k > atester: return True
        else:
            if atester % k == 0: return False
            else: k = k + 1

def residu_quadratique(y):
    if y % 2 == 1:
        milieuplusun = 1+(y-1)/2
    else:
        milieuplusun = 1+y/2
    milieuplusun = int(milieuplusun)
    RQ = []
    for k in range(1,milieuplusun):
        RQ.append(pow(k,2) % y)
    return RQ

for n in range(3,101):
    L = residu_quadratique(n)
    print('\n',n, ' --> ', L)
    somme1 = 0.0
    somme1bis = 0.0
    somme2 = 0.0
    somme2bis = 0.0
    for x in L:
        if x <= n//2:
            somme1 = somme1+cos(2*pi*x/n)
            somme1bis = somme1bis+cos(2*pi*x/n)
    for y in range(1,n):
        if not(y in L):
            if y <= n//2:
                somme2 = somme2+cos(2*pi*y/n)
                somme2bis = somme2bis+sin(2*pi*y/n)
    print('somme1 ', 1+4*somme1, ' ', 'somme2 ',1+4*somme2)
    print('somme1bis ', 2*somme1bis, ' ', 'somme2bis ',2*somme2bis)
    print('plus ou moins la racine ', sqrt(n))

```

```

3 --> [1]
somme1 -0.99999999999999991  somme2 1.0
somme1bis -0.99999999999999996  somme2bis 0.0
plus ou moins la racine  1.7320508075688772

```

```

4 --> [1, 0]

```

Traceback (most recent call last):

File "C:\Users\Denise_Vella\Desktop\quarumdam2.py", line 40, in <module>

```
somme2bis = somme2bis+sin(2*pi*y/n)
```

^^^

NameError: name 'sin' is not defined. Did you mean: 'bin'?

C:\Users\Denise_Vella\Desktop>python3 quarumdam2.py

```
3 --> [1]
somme1 -0.9999999999999991  somme2 1.0
somme1bis -0.9999999999999996  somme2bis 0.0
plus ou moins la racine 1.7320508075688772

4 --> [1, 0]
somme1 5.0  somme2 -3.0
somme1bis 2.0  somme2bis 2.4492935982947064e-16
plus ou moins la racine 2.0

5 --> [1, 4]
somme1 2.23606797749979  somme2 -2.2360679774997894
somme1bis 0.6180339887498949  somme2bis 1.1755705045849465
plus ou moins la racine 2.23606797749979

6 --> [1, 4, 3]
somme1 -0.9999999999999996  somme2 -0.9999999999999991
somme1bis -0.9999999999999998  somme2bis 1.7320508075688774
plus ou moins la racine 2.449489742783178

7 --> [1, 4, 2]
somme1 2.603875471609677  somme2 -2.603875471609676
somme1bis 0.8019377358048385  somme2bis 0.8677674782351165
plus ou moins la racine 2.6457513110645907

8 --> [1, 4, 1, 0]
somme1 6.656854249492381  somme2 -1.8284271247461894
somme1bis 2.8284271247461903  somme2bis 3.414213562373095
plus ou moins la racine 2.8284271247461903

9 --> [1, 4, 0, 7]
somme1 4.305407289332279  somme2 -0.30540728933227745
somme1bis 1.6527036446661394  somme2bis 3.7016663135932935
plus ou moins la racine 3.0

10 --> [1, 4, 9, 6, 5]
somme1 -2.9999999999999996  somme2 1.0000000000000004
somme1bis -1.9999999999999998  somme2bis 3.8042260651806146
plus ou moins la racine 3.1622776601683795

11 --> [1, 4, 9, 5, 3]
somme1 -2.6616600520075444  somme2 2.6616600520075457
somme1bis -1.8308300260037722  somme2bis 1.8192639907090367
plus ou moins la racine 3.3166247903554
```

12 --> [1, 4, 9, 4, 1, 0]
somme1 7.928203230275511 somme2 -4.4641016151377535
somme1bis 3.4641016151377557 somme2bis 4.732050807568877
plus ou moins la racine 3.4641016151377544

13 --> [1, 4, 9, 3, 12, 10]
somme1 3.60555127546399 somme2 -3.6055512754639896
somme1bis 1.302775637731995 somme2bis 3.4508443768440182
plus ou moins la racine 3.605551275463989

14 --> [1, 4, 9, 2, 11, 8, 7]
somme1 2.207750943219354 somme2 -4.207750943219352
somme1bis 0.603875471609677 somme2bis 4.381286267534823
plus ou moins la racine 3.7416573867739413

15 --> [1, 4, 9, 1, 10, 6, 4]
somme1 4.236067977499792 somme2 -0.9999999999999991
somme1bis 1.6180339887498956 somme2bis 5.536276872749491
plus ou moins la racine 3.872983346207417

16 --> [1, 4, 9, 0, 9, 4, 1, 0]
somme1 16.391036260090296 somme2 -6.695518130045146
somme1bis 7.695518130045148 somme2bis 7.289312119521517
plus ou moins la racine 4.0

17 --> [1, 4, 9, 16, 8, 2, 15, 13]
somme1 4.12310562561766 somme2 -4.12310562561766
somme1bis 1.56155281280883 somme2bis 6.362876649370953
plus ou moins la racine 4.123105625617661

18 --> [1, 4, 9, 16, 7, 0, 13, 10, 9]
somme1 -1.6108145786645558 somme2 -0.3891854213354411
somme1bis -1.305407289332278 somme2bis 7.403332627186587
plus ou moins la racine 4.242640687119285

19 --> [1, 4, 9, 16, 6, 17, 11, 7, 5]
somme1 -2.826459665249324 somme2 2.8264596652493257
somme1bis -1.913229832624662 somme2bis 3.8546531679785403
plus ou moins la racine 4.358898943540674

20 --> [1, 4, 9, 16, 5, 16, 9, 4, 1, 0]
somme1 7.47213595499958 somme2 -4.236067977499788
somme1bis 3.23606797749979 somme2bis 7.4893220192599905
plus ou moins la racine 4.47213595499958

21 --> [1, 4, 9, 16, 4, 15, 7, 1, 18, 16]
somme1 5.9634351696106105 somme2 -0.6797798490004654
somme1bis 2.4817175848053052 somme2bis 8.2929965076835
plus ou moins la racine 4.58257569495584

22 --> [1, 4, 9, 16, 3, 14, 5, 20, 15, 12, 11]

somme1 2.3233201040150915 somme2 -4.323320104015091
somme1bis 0.6616600520075457 somme2bis 6.955152771773474
plus ou moins la racine 4.69041575982343

23 --> [1, 4, 9, 16, 2, 13, 3, 18, 12, 8, 6]
somme1 7.157283386640547 somme2 -7.157283386640543
somme1bis 3.0786416933202734 somme2bis 4.911825497487264
plus ou moins la racine 4.795831523312719

24 --> [1, 4, 9, 16, 1, 12, 1, 16, 9, 4, 1, 0]
somme1 14.797958971132713 somme2 -2.0352761804100816
somme1bis 6.898979485566357 somme2bis 11.527605765303287
plus ou moins la racine 4.898979485566356

25 --> [1, 4, 9, 16, 0, 11, 24, 14, 6, 0, 21, 19]
somme1 9.0 somme2 -0.9999999999999987
somme1bis 4.0 somme2bis 9.435180170754087
plus ou moins la racine 5.0

26 --> [1, 4, 9, 16, 25, 10, 23, 12, 3, 22, 17, 14, 13]
somme1 -2.9999999999999996 somme2 1.0000000000000013
somme1bis -1.9999999999999998 somme2bis 9.569793155308949
plus ou moins la racine 5.0990195135927845

27 --> [1, 4, 9, 16, 25, 9, 22, 10, 0, 19, 13, 9, 7]
somme1 -1.6696854489541666 somme2 1.6696854489541706
somme1bis -1.3348427244770833 somme2bis 9.688258566982896
plus ou moins la racine 5.196152422706632

28 --> [1, 4, 9, 16, 25, 8, 21, 8, 25, 16, 9, 4, 1, 0]
somme1 12.53610432773348 somme2 -6.768052163866737
somme1bis 5.76805216386674 somme2bis 11.989992556922342
plus ou moins la racine 5.291502622129181

29 --> [1, 4, 9, 16, 25, 7, 20, 6, 23, 13, 5, 28, 24, 22]
somme1 5.385164807134505 somme2 -5.385164807134503
somme1bis 2.1925824035672523 somme2bis 8.301902343813667
plus ou moins la racine 5.385164807134504

30 --> [1, 4, 9, 16, 25, 6, 19, 4, 21, 10, 1, 24, 19, 16, 15]
somme1 8.178225656741311 somme2 -3.589112828370654
somme1bis 3.5891128283706557 somme2bis 11.590339003105372
plus ou moins la racine 5.477225575051661

31 --> [1, 4, 9, 16, 25, 5, 18, 2, 19, 7, 28, 20, 14, 10, 8]
somme1 7.288045402899337 somme2 -7.288045402899336
somme1bis 3.1440227014496687 somme2bis 7.075277702840616
plus ou moins la racine 5.5677643628300215

32 --> [1, 4, 9, 16, 25, 4, 17, 0, 17, 4, 25, 16, 9, 4, 1, 0]
somme1 18.59926816608158 somme2 -4.971206958294598
somme1bis 8.79963408304079 somme2bis 16.54037600800591

plus ou moins la racine 5.656854249492381

33 --> [1, 4, 9, 16, 25, 3, 16, 31, 15, 1, 22, 12, 4, 31, 27, 25]
somme1 3.019866450349994 somme2 -0.17910319917122086
somme1bis 1.009933225174997 somme2bis 13.907922082037707
plus ou moins la racine 5.744562646538029

34 --> [1, 4, 9, 16, 25, 2, 15, 30, 13, 32, 19, 8, 33, 26, 21, 18, 17]
somme1 -2.9999999999999999 somme2 1.00000000000000036
somme1bis -1.9999999999999996 somme2bis 12.725753298741909
plus ou moins la racine 5.830951894845301

35 --> [1, 4, 9, 16, 25, 1, 14, 29, 11, 30, 16, 4, 29, 21, 15, 11, 9]
somme1 -3.158756793893871 somme2 4.4993501215016725
somme1bis -2.0793783969469355 somme2bis 14.181285465018112
plus ou moins la racine 5.916079783099616

36 --> [1, 4, 9, 16, 25, 0, 13, 28, 9, 28, 13, 0, 25, 16, 9, 4, 1, 0]
somme1 14.346975725269909 somme2 -3.67348786263495
somme1bis 6.673487862634954 somme2bis 17.011103857926454
plus ou moins la racine 6.0

37 --> [1, 4, 9, 16, 25, 36, 12, 27, 7, 26, 10, 33, 21, 11, 3, 34, 30, 28]
somme1 6.082762530298222 somme2 -6.0827625302982185
somme1bis 2.541381265149111 somme2bis 10.611182496036992
plus ou moins la racine 6.082762530298219

38 --> [1, 4, 9, 16, 25, 36, 11, 26, 5, 24, 7, 30, 17, 6, 35, 28, 23, 20, 19]
somme1 2.652919330498653 somme2 -4.652919330498648
somme1bis 0.8264596652493266 somme2bis 12.068205279497754
plus ou moins la racine 6.164414002968976

39 --> [1, 4, 9, 16, 25, 36, 10, 25, 3, 22, 4, 27, 13, 1, 30, 22, 16, 12, 10]
somme1 8.813847278569625 somme2 -5.209699277016803
somme1bis 3.906923639284812 somme2bis 13.708179936511552
plus ou moins la racine 6.244997998398398

40 --> [1, 4, 9, 16, 25, 36, 9, 24, 1, 20, 1, 24, 9, 36, 25, 16, 9, 4, 1, 0]
somme1 19.305964890165903 somme2 -3.5764912225414713
somme1bis 9.152982445082952 somme2bis 20.773022851908785
plus ou moins la racine 6.324555320336759

41 --> [1, 4, 9, 16, 25, 36, 8, 23, 40, 18, 39, 21, 5, 32, 20, 10, 2, 37, 33, 31]
somme1 6.403124237432849 somme2 -6.403124237432846
somme1bis 2.7015621187164247 somme2bis 14.624949995669711
plus ou moins la racine 6.4031242374328485

42 --> [1, 4, 9, 16, 25, 36, 7, 22, 39, 16, 37, 18, 1, 28, 15, 4, 37, 30, 25, 22, 21]
somme1 2.4483908864710244 somme2 -0.12031997162582941
somme1bis 0.7241954432355122 somme2bis 17.789738080070286
plus ou moins la racine 6.48074069840786

43 --> [1, 4, 9, 16, 25, 36, 6, 21, 38, 14, 35, 15, 40, 24, 10, 41, 31, 23, 17, 13, 11]
somme1 -3.224351342846804 somme2 3.2243513428468065
somme1bis -2.112175671423402 somme2bis 10.402516944186079
plus ou moins la racine 6.557438524302

44 --> [1, 4, 9, 16, 25, 36, 5, 20, 37, 12, 33, 12, 37, 20, 5, 36, 25, 16, 9, 4, 1, 0]
somme1 13.895108480597875 somme2 -7.447554240298928
somme1bis 6.447554240298937 somme2bis 19.314428037480916
plus ou moins la racine 6.6332495807108

45 --> [1, 4, 9, 16, 25, 36, 4, 19, 36, 10, 31, 9, 34, 16, 0, 31, 19, 9, 1, 40, 36, 34]
somme1 12.120453416874382 somme2 -4.289489075021155
somme1bis 5.560226708437191 somme2bis 20.911375381129115
plus ou moins la racine 6.708203932499369

46 --> [1, 4, 9, 16, 25, 36, 3, 18, 35, 8, 29, 6, 31, 12, 41, 26, 13, 2, 39, 32, 27, 24, 23]
somme1 11.314566773281092 somme2 -13.314566773281088
somme1bis 5.157283386640546 somme2bis 14.619482518287246
plus ou moins la racine 6.782329983125268

47 --> [1, 4, 9, 16, 25, 36, 2, 17, 34, 6, 27, 3, 28, 8, 37, 21, 7, 42, 32, 24, 18, 14, 12]
somme1 11.660951478810238 somme2 -11.660951478810233
somme1bis 5.330475739405119 somme2bis 11.527166735867622
plus ou moins la racine 6.855654600401044

48 --> [1, 4, 9, 16, 25, 36, 1, 16, 33, 4, 25, 0, 25, 4, 33, 16, 1, 36, 25, 16, 9, 4, 1, 0]
somme1 33.7809917014527 somme2 -9.96061479009335
somme1bis 16.39049585072635 somme2bis 25.673241119499522
plus ou moins la racine 6.928203230275509

49 --> [1, 4, 9, 16, 25, 36, 0, 15, 32, 2, 23, 46, 22, 0, 29, 11, 44, 30, 18, 8, 0, 43, 39, 37]
somme1 15.00944099410708 somme2 -3.0094409941070737
somme1bis 7.00472049705354 somme2bis 17.782484346048083
plus ou moins la racine 7.0

50 --> [1, 4, 9, 16, 25, 36, 49, 14, 31, 0, 21, 44, 19, 46, 25, 6, 39, 24, 11, 0, 41, 34, 29, 26, 25]
somme1 -2.9999999999999987 somme2 1.0000000000000004
somme1bis -1.9999999999999993 somme2bis 19.074096420572946
plus ou moins la racine 7.0710678118654755

51 --> [1, 4, 9, 16, 25, 36, 49, 13, 30, 49, 19, 42, 16, 43, 21, 1, 34, 18, 4, 43, 33, 25, 19, 15, 13]
somme1 -6.05418964634646 somme2 5.088647635982062
somme1bis -3.52709482317323 somme2bis 19.50269262065656
plus ou moins la racine 7.14142842854285

52 --> [1, 4, 9, 16, 25, 36, 49, 12, 29, 48, 17, 40, 13, 40, 17, 48, 29, 12, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 10.21110255092798 somme2 -5.605551275463986
somme1bis 4.60555127546399 somme2bis 22.255074128825893
plus ou moins la racine 7.211102550927978

53 --> [1, 4, 9, 16, 25, 36, 49, 11, 28, 47, 15, 38, 10, 37, 13, 44, 24, 6, 43, 29, 17, 7, 52, 46, 42, 40]
somme1 7.280109889280519 somme2 -7.280109889280517

somme1bis 3.1400549446402595 somme2bis 15.671355143788928
plus ou moins la racine 7.280109889280518

54 --> [1, 4, 9, 16, 25, 36, 49, 10, 27, 46, 13, 36, 7, 34, 9, 40, 19, 0, 37, 22, 9, 52, 43, 36, 31, 28, 27]

somme1 4.33937089790834 somme2 -2.33937089790834
somme1bis 1.6696854489541701 somme2bis 21.108567941534666
plus ou moins la racine 7.3484692283495345

55 --> [1, 4, 9, 16, 25, 36, 49, 9, 26, 45, 11, 34, 4, 31, 5, 36, 14, 49, 31, 15, 1, 44, 34, 26, 20, 16, 14]

somme1 7.687603164244201 somme2 -3.13100554486822
somme1bis 3.3438015821221003 somme2bis 20.86891960801041
plus ou moins la racine 7.416198487095663

56 --> [1, 4, 9, 16, 25, 36, 49, 8, 25, 44, 9, 32, 1, 28, 1, 32, 9, 44, 25, 8, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 20.725277184042092 somme2 -6.535194767620194
somme1bis 9.862638592021046 somme2bis 28.654077748592186
plus ou moins la racine 7.483314773547883

57 --> [1, 4, 9, 16, 25, 36, 49, 7, 24, 43, 7, 30, 55, 25, 54, 28, 4, 39, 19, 1, 42, 28, 16, 6, 55, 49, 45, 43]

somme1 4.8135327501463046 somme2 -2.8199962076978107
somme1bis 1.906766375073152 somme2bis 25.39757647458381
plus ou moins la racine 7.54983443527075

58 --> [1, 4, 9, 16, 25, 36, 49, 6, 23, 42, 5, 28, 53, 22, 51, 24, 57, 34, 13, 52, 35, 20, 7, 54, 45, 38, 33, 30, 29]

somme1 -2.999999999999997 somme2 1.0000000000000027
somme1bis -1.9999999999999984 somme2bis 20.284024784431203
plus ou moins la racine 7.615773105863909

59 --> [1, 4, 9, 16, 25, 36, 49, 5, 22, 41, 3, 26, 51, 19, 48, 20, 53, 29, 7, 46, 28, 12, 57, 45, 35, 27, 21, 17, 15]

somme1 -7.5387580545183415 somme2 7.538758054518343
somme1bis -4.269379027259171 somme2bis 14.935272923453914
plus ou moins la racine 7.681145747868608

60 --> [1, 4, 9, 16, 25, 36, 49, 4, 21, 40, 1, 24, 49, 16, 45, 16, 49, 24, 1, 40, 21, 4, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 20.456283050616445 somme2 -3.513985966335337
somme1bis 9.728141525308223 somme2bis 29.739060889948234
plus ou moins la racine 7.745966692414834

61 --> [1, 4, 9, 16, 25, 36, 49, 3, 20, 39, 60, 22, 47, 13, 42, 12, 45, 19, 56, 34, 14, 57, 41, 27, 15, 5, 58, 52, 48, 46]

somme1 7.8102496759066575 somme2 -7.810249675906652
somme1bis 3.4051248379533288 somme2bis 17.880680525366508
plus ou moins la racine 7.810249675906654

62 --> [1, 4, 9, 16, 25, 36, 49, 2, 19, 38, 59, 20, 45, 10, 39, 8, 41, 14, 51, 28, 7, 50, 33, 18, 5, 56, 47, 40, 35, 32, 31]

somme1 11.576090805798675 somme2 -13.57609080579867
somme1bis 5.288045402899337 somme2bis 19.718319768511247
plus ou moins la racine 7.874007874011811

63 --> [1, 4, 9, 16, 25, 36, 49, 1, 18, 37, 58, 18, 43, 7, 36, 4, 37, 9, 46, 22, 0, 43, 25, 9, 58, 46, 36, 28, 22, 18, 16]

somme1 13.202634632481498 somme2 -3.9520832251020455
somme1bis 6.101317316240749 somme2bis 28.808731445862197
plus ou moins la racine 7.937253933193772

64 --> [1, 4, 9, 16, 25, 36, 49, 0, 17, 36, 57, 16, 41, 4, 33, 0, 33, 4, 41, 16, 57, 36, 17, 0, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 37.850475857328945 somme2 -9.729719798619323
somme1bis 18.425237928664473 somme2bis 32.944357176187914
plus ou moins la racine 8.0

65 --> [1, 4, 9, 16, 25, 36, 49, 64, 16, 35, 56, 14, 39, 1, 30, 61, 29, 64, 36, 10, 51, 29, 9, 56, 40, 26, 14, 4, 61, 55, 51, 49]

somme1 8.062257748298553 somme2 -0.6103192476673773
somme1bis 3.5311288741492763 somme2bis 29.65385178467221
plus ou moins la racine 8.06225774829855

66 --> [1, 4, 9, 16, 25, 36, 49, 64, 15, 34, 55, 12, 37, 64, 27, 58, 25, 60, 31, 4, 45, 22, 1, 48, 31, 16, 3, 58, 49, 42, 37, 34, 33]

somme1 2.449392392376078 somme2 -3.3863562481955825
somme1bis 0.7246961961880389 somme2bis 28.608131155468676
plus ou moins la racine 8.12403840463596

67 --> [1, 4, 9, 16, 25, 36, 49, 64, 14, 33, 54, 10, 35, 62, 24, 55, 21, 56, 26, 65, 39, 15, 60, 40, 22, 6, 59, 47, 37, 29, 23, 19, 17]

somme1 -3.5259556888808374 somme2 3.5259556888808397
somme1bis -2.2629778444404187 somme2bis 17.2301783916376
plus ou moins la racine 8.18535277187245

68 --> [1, 4, 9, 16, 25, 36, 49, 64, 13, 32, 53, 8, 33, 60, 21, 52, 17, 52, 21, 60, 33, 8, 53, 32, 13, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 11.24621125123532 somme2 -6.123105625617651
somme1bis 5.12310562561766 somme2bis 29.77550017719811
plus ou moins la racine 8.246211251235321

69 --> [1, 4, 9, 16, 25, 36, 49, 64, 12, 31, 52, 6, 31, 58, 18, 49, 13, 48, 16, 55, 27, 1, 46, 24, 4, 55, 39, 25, 13, 3, 64, 58, 54, 52]

somme1 13.741509571698279 somme2 -10.4493964791694
somme1bis 6.370754785849139 somme2bis 27.329045406427976
plus ou moins la racine 8.306623862918075

70 --> [1, 4, 9, 16, 25, 36, 49, 64, 11, 30, 51, 4, 29, 56, 15, 46, 9, 44, 11, 50, 21, 64, 39, 16, 65, 46, 29, 14, 1, 60, 51, 44, 39, 36, 35]

somme1 11.391875195098512 somme2 -3.5920621259395773
somme1bis 5.195937597549256 somme2bis 29.34348520513746
plus ou moins la racine 8.366600265340756

71 --> [1, 4, 9, 16, 25, 36, 49, 64, 10, 29, 50, 2, 27, 54, 12, 43, 5, 40, 6, 45, 15, 58, 32, 8, 57, 37, 19, 3, 60, 48, 38, 30, 24, 20, 18]
somme1 16.05771694895494 somme2 -16.05771694895493
somme1bis 7.528858474477469 somme2bis 18.383239596813056
plus ou moins la racine 8.426149773176359

72 --> [1, 4, 9, 16, 25, 36, 49, 64, 9, 28, 49, 0, 25, 52, 9, 40, 1, 36, 1, 40, 9, 52, 25, 0, 49, 28, 9, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 27.51082577899922 somme2 -4.908085593044427
somme1bis 13.25541288949961 somme2bis 38.64147094836716
plus ou moins la racine 8.48528137423857

73 --> [1, 4, 9, 16, 25, 36, 49, 64, 8, 27, 48, 71, 23, 50, 6, 37, 70, 32, 69, 35, 3, 46, 18, 65, 41, 19, 72, 54, 38, 24, 12, 2, 67, 61, 57, 55]
somme1 8.544003745317532 somme2 -8.544003745317527
somme1bis 3.772001872658766 somme2bis 25.607843282810403
plus ou moins la racine 8.54400374531753

74 --> [1, 4, 9, 16, 25, 36, 49, 64, 7, 26, 47, 70, 21, 48, 3, 34, 67, 28, 65, 30, 71, 40, 11, 58, 33, 10, 63, 44, 27, 12, 73, 62, 53, 46, 41, 38, 37]
somme1 -2.999999999999982 somme2 1.0000000000000027
somme1bis -1.999999999999991 somme2bis 25.859192125296023
plus ou moins la racine 8.602325267042627

75 --> [1, 4, 9, 16, 25, 36, 49, 64, 6, 25, 46, 69, 19, 46, 0, 31, 64, 24, 61, 25, 66, 34, 4, 51, 25, 1, 54, 34, 16, 0, 61, 49, 39, 31, 25, 21, 19]
somme1 1.6847513761736799 somme2 -0.34237568808683383
somme1bis 0.34237568808683994 somme2bis 33.26402819977482
plus ou moins la racine 8.660254037844387

76 --> [1, 4, 9, 16, 25, 36, 49, 64, 5, 24, 45, 68, 17, 44, 73, 28, 61, 20, 57, 20, 61, 28, 73, 44, 17, 68, 45, 24, 5, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 16.040912090129503 somme2 -8.520456045064739
somme1bis 7.520456045064751 somme2bis 34.08720682563783
plus ou moins la racine 8.717797887081348

77 --> [1, 4, 9, 16, 25, 36, 49, 64, 4, 23, 44, 67, 15, 42, 71, 25, 58, 16, 53, 15, 56, 22, 67, 37, 9, 60, 36, 14, 71, 53, 37, 23, 11, 1, 70, 64, 60, 58]
somme1 8.768735061567014 somme2 -6.517135292592122
somme1bis 3.884367530783507 somme2bis 33.38424117687464
plus ou moins la racine 8.774964387392123

78 --> [1, 4, 9, 16, 25, 36, 49, 64, 3, 22, 43, 66, 13, 40, 69, 22, 55, 12, 49, 10, 51, 16, 61, 30, 1, 52, 27, 4, 61, 42, 25, 10, 75, 64, 55, 48, 43, 40, 39]
somme1 17.300138498626477 somme2 -10.15006924931323
somme1bis 8.150069249313239 somme2bis 33.07155614350127
plus ou moins la racine 8.831760866327848

79 --> [1, 4, 9, 16, 25, 36, 49, 64, 2, 21, 42, 65, 11, 38, 67, 19, 52, 8, 45, 5, 46, 10, 55, 23, 72, 44, 18, 73, 51, 31, 13, 76, 62, 50, 40, 32, 26, 22, 20]
somme1 12.051007279630284 somme2 -12.051007279630277
somme1bis 5.525503639815142 somme2bis 20.699069796212566

plus ou moins la racine 8.888194417315589

80 --> [1, 4, 9, 16, 25, 36, 49, 64, 1, 20, 41, 64, 9, 36, 65, 16, 49, 4, 41, 0, 41, 4, 49, 16, 65, 36, 9, 64, 41, 20, 1, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 38.99997724040898 somme2 -9.734627445372055

somme1bis 18.99998862020449 somme2bis 42.461644795485434

plus ou moins la racine 8.94427190999916

81 --> [1, 4, 9, 16, 25, 36, 49, 64, 0, 19, 40, 63, 7, 34, 63, 13, 46, 0, 37, 76, 36, 79, 43, 9, 58, 28, 0, 55, 31, 9, 70, 52, 36, 22, 10, 0, 73, 67, 63, 61]

somme1 14.24922079033675 somme2 0.36159378832780753

somme1bis 6.624610395168375 somme2bis 32.39492156736222

plus ou moins la racine 9.0

82 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 18, 39, 62, 5, 32, 61, 10, 43, 78, 33, 72, 31, 74, 37, 2, 51, 20, 73, 46, 21, 80, 59, 40, 23, 8, 77, 66, 57, 50, 45, 42, 41]

somme1 -2.9999999999999973 somme2 1.0000000000000018

somme1bis -1.9999999999999987 somme2bis 29.249899991339422

plus ou moins la racine 9.055385138137417

83 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 17, 38, 61, 3, 30, 59, 7, 40, 75, 29, 68, 26, 69, 31, 78, 44, 12, 65, 37, 11, 70, 48, 28, 10, 77, 63, 51, 41, 33, 27, 23, 21]

somme1 -7.8053676719185425 somme2 7.805367671918546

somme1bis -4.402683835959271 somme2bis 21.86134947887312

plus ou moins la racine 9.1104335791443

84 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 16, 37, 60, 1, 28, 57, 4, 37, 72, 25, 64, 21, 64, 25, 72, 37, 4, 57, 28, 1, 60, 37, 16, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 17.5267201849826 somme2 -4.893405275376872

somme1bis 8.2633600924913 somme2bis 42.36178169539534

plus ou moins la racine 9.16515138991168

85 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 15, 36, 59, 84, 26, 55, 1, 34, 69, 21, 60, 16, 59, 19, 66, 30, 81, 49, 19, 76, 50, 26, 4, 69, 51, 35, 21, 9, 84, 76, 70, 66, 64]

somme1 9.21954445729289 somme2 -0.9301854270877148

somme1bis 4.109772228646445 somme2bis 35.97731257663797

plus ou moins la racine 9.219544457292887

86 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 14, 35, 58, 83, 24, 53, 84, 31, 66, 17, 56, 11, 54, 13, 60, 23, 74, 41, 10, 67, 40, 15, 78, 57, 38, 21, 6, 79, 68, 59, 52, 47, 44, 43]

somme1 3.4487026856936165 somme2 -5.448702685693606

somme1bis 1.2243513428468082 somme2bis 27.362472412674162

plus ou moins la racine 9.273618495495704

87 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 13, 34, 57, 82, 22, 51, 82, 28, 63, 13, 52, 6, 49, 7, 54, 16, 67, 33, 1, 58, 30, 4, 67, 45, 25, 7, 78, 64, 52, 42, 34, 28, 24, 22]

somme1 13.530450002742501 somme2 -4.072642597803997

somme1bis 6.265225001371251 somme2bis 34.93999177769295

plus ou moins la racine 9.327379053088816

88 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 12, 33, 56, 81, 20, 49, 80, 25, 60, 9, 48, 1, 44, 1, 48, 9, 60, 25, 80, 49, 20, 81, 56, 33, 12, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]

somme1 31.356635014244 somme2 -7.8366052431954465
somme1bis 15.178317507122 somme2bis 44.33384423606964
plus ou moins la racine 9.38083151964686

89 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 11, 32, 55, 80, 18, 47, 78, 22, 57, 5, 44, 85, 39, 84, 42, 2, 53, 17, 72, 40, 10, 71, 45, 21, 88, 68, 50, 34, 20, 8, 87, 79, 73, 69, 67]
somme1 9.433981132056607 somme2 -9.433981132056598
somme1bis 4.216990566028303 somme2bis 30.68474516628886
plus ou moins la racine 9.433981132056603

90 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 10, 31, 54, 79, 16, 45, 76, 19, 54, 1, 40, 81, 34, 79, 36, 85, 46, 9, 64, 31, 0, 61, 34, 9, 76, 55, 36, 19, 4, 81, 70, 61, 54, 49, 46, 45]
somme1 6.495503256884481 somme2 -3.053158917774507
somme1bis 2.7477516284422405 somme2bis 43.50577545431182
plus ou moins la racine 9.486832980505138

91 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 9, 30, 53, 78, 14, 43, 74, 16, 51, 88, 36, 77, 29, 74, 30, 79, 39, 1, 56, 22, 81, 51, 23, 88, 64, 42, 22, 4, 79, 65, 53, 43, 35, 29, 25, 23]
somme1 -3.8006502664675335 somme2 5.505038506770612
somme1bis -2.4003251332337667 somme2bis 38.866107147859275
plus ou moins la racine 9.539392014169456

92 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 8, 29, 52, 77, 12, 41, 72, 13, 48, 85, 32, 73, 24, 69, 24, 73, 32, 85, 48, 13, 72, 41, 12, 77, 52, 29, 8, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 25.065750337006893 somme2 -13.032875168503438
somme1bis 12.032875168503447 somme2bis 41.51177333115488
plus ou moins la racine 9.591663046625438

93 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 7, 28, 51, 76, 10, 39, 70, 10, 45, 82, 28, 69, 19, 64, 18, 67, 25, 78, 40, 4, 63, 31, 1, 66, 40, 16, 87, 67, 49, 33, 19, 7, 90, 82, 76, 72, 70]
somme1 15.089169994933396 somme2 -2.900562296017029
somme1bis 7.044584997466698 somme2bis 39.14476524328937
plus ou moins la racine 9.643650760992955

94 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 6, 27, 50, 75, 8, 37, 68, 7, 42, 79, 24, 65, 14, 59, 12, 61, 18, 71, 32, 89, 54, 21, 84, 55, 28, 3, 74, 53, 34, 17, 2, 83, 72, 63, 56, 51, 48, 47]
somme1 20.321902957620477 somme2 -22.321902957620473
somme1bis 9.660951478810238 somme2bis 29.909988072136294
plus ou moins la racine 9.695359714832659

95 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 5, 26, 49, 74, 6, 35, 66, 4, 39, 76, 20, 61, 9, 54, 6, 55, 11, 64, 24, 81, 45, 11, 74, 44, 16, 85, 61, 39, 19, 1, 80, 66, 54, 44, 36, 30, 26, 24]
somme1 16.344979972234142 somme2 -7.377294142242302
somme1bis 7.67248998611707 somme2bis 37.85387396198903
plus ou moins la racine 9.746794344808963

96 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 4, 25, 48, 73, 4, 33, 64, 1, 36, 73, 16, 57, 4, 49, 0, 49, 4, 57, 16, 73, 36, 1, 64, 33, 4, 73, 48, 25, 4, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 45.72240568066433 somme2 -6.86869687357569
somme1bis 22.361202840332165 somme2bis 52.5291737181593
plus ou moins la racine 9.797958971132712

97 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 3, 24, 47, 72, 2, 31, 62, 95, 33, 70, 12, 53, 96, 44, 91, 43, 94, 50, 8, 65, 27, 88, 54, 22, 89, 61, 35, 11, 86, 66, 48, 32, 18, 6, 93, 85, 79, 75, 73]
somme1 9.8488578017961 somme2 -9.848857801796102
somme1bis 4.42442890089805 somme2bis 33.63050436738172
plus ou moins la racine 9.848857801796104

98 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 2, 23, 46, 71, 0, 29, 60, 93, 30, 67, 8, 49, 92, 39, 86, 37, 88, 43, 0, 57, 18, 79, 44, 11, 78, 49, 22, 95, 72, 51, 32, 15, 0, 85, 74, 65, 58, 53, 50, 49]
somme1 1.0188819882141615 somme2 -3.018881988214151
somme1bis 0.009440994107080769 somme2bis 35.564968692096166
plus ou moins la racine 9.899494936611665

99 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 1, 22, 45, 70, 97, 27, 58, 91, 27, 64, 4, 45, 88, 34, 81, 31, 82, 36, 91, 49, 9, 70, 34, 0, 67, 37, 9, 82, 58, 36, 16, 97, 81, 67, 55, 45, 37, 31, 27, 25]
somme1 -6.601921349393396 somme2 2.6228342933590705
somme1bis -3.800960674696698 somme2bis 46.58752877585881
plus ou moins la racine 9.9498743710662

100 --> [1, 4, 9, 16, 25, 36, 49, 64, 81, 0, 21, 44, 69, 96, 25, 56, 89, 24, 61, 0, 41, 84, 29, 76, 25, 76, 29, 84, 41, 0, 61, 24, 89, 56, 25, 96, 69, 44, 21, 0, 81, 64, 49, 36, 25, 16, 9, 4, 1, 0]
somme1 21.0 somme2 -2.9999999999999933
somme1bis 10.0 somme2bis 48.91286533188893
plus ou moins la racine 10.0