

```

(init-moduli 5 13 17) = (221 170 -390)
*BIGM* = 1105

(bigp4tup '(2 -5 -4)) = 47
(bigp4tup '(2 -5 4)) = 242
(bigp4tup '(2 5 4)) = -268
(bigp4tup '(2 5 -4)) = -463

(mod (* 463 463) 1105) = 1104

(sqrt 1105) = 33.24154027718932 [Approximately]

(loop for rono in '(47 242 268 463) do
  (lightning 1105 rono) )
  n:      r_n    q_n      s_n    t_n
/-----\
0:      1105    --        1      0
1:       47     23        0      1
2:       24     1         1     -23
3:       23     1        -1      24
4:        1     23         2     -47
5:        0  infty    -47     1105
\-----/

  n:      r_n    q_n      s_n    t_n
/-----\
0:      1105    --        1      0
1:       242     4         0      1
2:       137     1         1     -4
3:       105     1        -1      5
4:        32     3         2     -9
5:         9     3        -7      32
6:         5     1        23    -105
7:         4     1       -30     137
8:         1     4         53    -242
9:         0  infty    -242     1105
\-----/

```

```

n:      r_n   q_n   s_n   t_n
/-----\
0:    1105   --    1    0
1:    268    4    0    1
2:    33     8    1   -4
3:     4     8   -8   33
4:     1     4   65 -268
5:     0  infty -268 1105
\-----/

```

```

n:      r_n   q_n   s_n   t_n
/-----\
0:    1105   --    1    0
1:    463    2    0    1
2:    179    2    1   -2
3:    105    1   -2    5
4:     74    1    3   -7
5:     31    2   -5   12
6:     12    2   13  -31
7:      7    1  -31   74
8:      5    1   44 -105
9:      2    2  -75  179
10:     1    2  194 -463
11:     0  infty -463 1105
\-----/

```

```

(* 23 23)= 529, (* 24 24)=576,   529 + 576 = 1105
(* 32 32)=1024, (* 9 9)= 81,   1024 + 81 = 1105
(* 33 33)=1089, (* 4 4)= 16,   1089 + 16 = 1105
(* 31 31)= 961, (* 12 12)=144,   961 + 144 = 1105

```

```

(sqrt 1105) ~= 33.24154027718932 [Approximately]

```

Bigger example

```
(%I11) (21598 * 21598);
(%o11)                                466473604
```

```
(%I14) mod( 466473604+1 , 63509);
(%o14)                                0
```

```
(sqrt 63509) ~= 252.00992043965255 [Approx.]
```

```
(lightning 63509 21598)
```

n:	r_n	q_n	s_n	t_n
0:	63509	--	1	0
1:	21598	2	0	1
2:	20313	1	1	-2
3:	1285	15	-1	3
4:	1038	1	16	-47
5:	247	4	-17	50
6:	50	4	84	-247
7:	47	1	-353	1038
8:	3	15	437	-1285
9:	2	1	-6908	20313
10:	1	2	7345	-21598
11:	0	infty	-21598	63509

```
(%I22) display(xsqrd : 247^2 , ysqrd : 50^2,   xsqrd + ysqrd );
        xsqrd = 61009
        ysqrd = 2500
        61009 + 2500 = 63509
```