

2015

2015

8

-3 30 (210).

:

7

6-7

5-6

4

« + »

2-3

1

0

1

,

$$m^2 + n^2 = 2015$$

7

m, n

$$m = 2x, n = 2y + 1.$$

$$(2x)^2 + (2y + 1)^2 = 2015$$

$$4x^2 + 4y^2 + 4y + 1 = 2015$$

$$4x^2 + 4y^2 + 4y = 2014$$

4,

4

2

x, y, z

$$x^4 + y^4 + z^2 + 1 - 2x(xy^2 - x + z + 1).$$

7

$$x^4 + y^4 + z^2 + 1 - 2x(xy^2 - x + z + 1) =$$

$$= x^4 - 2x^2y^2 + y^4 + z^2 - 2xz + x^2 + x^2 - 2x + 1 =$$

$$= (x^2 - y^2)^2 + (z - x)^2 + (x - 1)^2 = 0.$$

3

(.) .

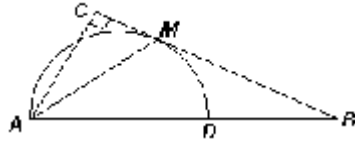
AD

, $AM -$

BC

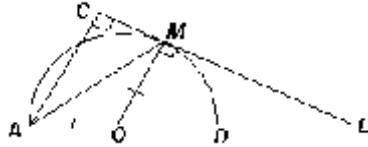
BAC .

ABC



7

(. .). = ,
 , \angle = \angle .
 , \perp , // AC, \angle = \angle .
 , \angle = \angle ,
 AM - BAC.



4

$\{x_n\}$

:

$$x_1 = 19, \quad x_2 = 97, \quad x_{n+2} = x_n - \frac{1}{x_{n+1}}$$

,

7

: 1845

,

,

0,

0.

(

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).

$$: x_{n+2}x_{n+1} = x_{n+1}x_n - 1.$$

$$x_k = 0$$

,

$$x_{k-1}x_{k-2} = 1,$$

$$x_{k-2}x_{k-3} = 2,$$

....,

$$x_3x_2 = k - 3,$$

$$x_2x_1 = k - 2 = 19 \cdot 97.$$

$$, k = 19 \cdot 97 + 2 = 1845.$$

5

$$1 \quad 100.$$

$$-1 \quad +4.$$

1, 2, 3, ..., 99, 2015?

7

:

3.

(x, y)

(x-1, y+4)

$$1 \quad 100.$$

$$2015 - 100 = 1915.$$

1915

3,

3

3.