

2015

2015

11

-3 30 (210).

7
6-7
5-6
4
2-3
1
0

« + »

1

$f(x)$, $a b$:

$f(ab) = f(a)f(b)$.

$f(2015) = 1007$. $f(0) + f(1)?$

7

: 1

$f(ab) = f(b)f(a)$, $a b$, $f(1) = f(1 \cdot 1) = f(1)f(1) = f(1)^2$,
 $= f(1) \cdot f(2015)$, $f(1) \neq 0$, $f(1) = 1$. , $2014 = f(2015) = f(1 \cdot 2015)$
 $f(0) \cdot f(2015) = 1007f(0)$, , $f(0) = 0$. , $f(0) = f(0 \cdot 2015) =$

2

61.

7

: 118.

$a b, a > b$, n . , $a + b = 61$. 61
 $a b -$, $a > 2 b > 2$, 61
 $b = 2 (a = 2, n, n (ab/2) (ab/2) > a > b$.
 (2.59). , $a = 59 n$
 2. , $n = 2 \cdot 58 = 118$.

3

$$\text{ctg } x + \sqrt{3} - \text{ctg } x + \sqrt{3} = ?$$

$$\text{tg } x + \sqrt{3} = n \quad \text{ctg } x + \sqrt{3} = m, \quad n \cdot m$$

$$1 = \text{tg } x \cdot \text{ctg } x = (n - \sqrt{3})(m - \sqrt{3}) = mn + 3 - (n + m)\sqrt{3}$$

$$0 = mn + 2 - (n + m)\sqrt{3}$$

$$n + m = 0$$

$$n^2 = 2, \quad n = \pm \sqrt{2}$$

4

$$ABCD A_1 B_1 C_1 D_1 \quad A_1 D_1 \quad L, \quad AB_1 C \quad C_1 D L,$$

$$A_1 L : LD_1 = 1 : 3.$$

$$ABCD \quad A_1 B_1 C_1 D_1.$$

$$; \sqrt{2}a.$$

$$AB_1 \quad DC_1, \quad AB_1$$

$$C_1 D L.$$

$$AB_1.$$

$$AB_1.$$

$$- 1 - 2, \quad -0.$$

5

$$+1 \quad -1 \quad 2^k.$$

$$2^k - 1 \quad -1$$

$$7$$

$$a_1, a_2, a_3, a_4, \dots, a_{2^k}$$

$$a_1 a_2, a_2 a_3, a_3 a_4, \dots, a_{2^k} a_1$$

$$a_1 a_3, a_2 a_4, a_3 a_5, \dots, a_{2^k} a_2$$

$$(a_i^2 = 1),$$

$$a_1 a_5, a_2 a_6, a_3 a_7, \dots, a_{2^k} a_4$$

$$a_1 a_9, a_2 a_{10}, a_3 a_{11}, \dots, a_{2^k} a_8$$

$$2^p$$

$$a_1 a_{2^p+1}, a_2 a_{2^p+2}, \dots, a_{2^k} a_{2^p}$$

$$a_1 a_{2^{k-1}+1}, a_2 a_{2^{k-1}+2}, \dots, a_{2^k} a_{2^{k-1}}$$

$$2^{k-1}$$

$$a_1^2, a_2^2, \dots, a_{2^k}^2,$$

3.

4

2^{k-1}

2^k