

II ()

8

-4

7

6-7

5-6

4

2-3

1

0

1

$x^2 + y^2 + 1 \geq xy + x + y.$

7

$x^2 + y^2 + 1 - (xy + x + y) \geq 0$

$2x^2 + 2y^2 + 2 - 2xy - 2x - 2y \geq 0$

$(x-y)^2 + (x-1)^2 + (y-1)^2 \geq 0$

2

$2^{100}?$

7

31

$2^{100} = (1024)^{10} > 1000^{10},$

2^{100}

31

$\frac{1024^{10}}{1000^{10}} < \left(\frac{1025}{1000}\right)^{10} = \left(\frac{41}{40}\right)^{10} < \frac{41}{40} \cdot \frac{40}{39} \cdot \frac{39}{38} \cdot \dots \cdot \frac{32}{31} = \frac{41}{31} < 10$

$2^{100} = (1024)^{10} < 10 \cdot 1000^{10},$

2^{100}

32

3

ABC

A

B.

BC

AB.

7

$$BC > AC.$$

$$BC > \frac{1}{2}AB.$$

$$BC + AC < AB,$$

$$AC < \frac{1}{2}AB.$$

$$BC > \frac{1}{2}AB.$$

4

50

370, 372, ..., 468

?

7

50,

8

8

$$370+372+\dots+384=3016$$

5

7

-

4

?

7

$$(4-k) -$$

$$(k$$

4

k
0,1,2,3,4).

k

$$(4-k) -$$

$$(4-k) - k = 2(2-k).$$

7

0