

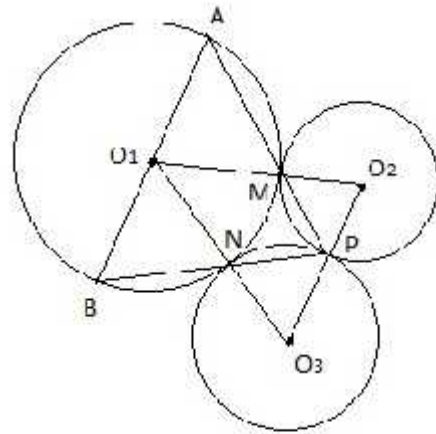
3.

1),

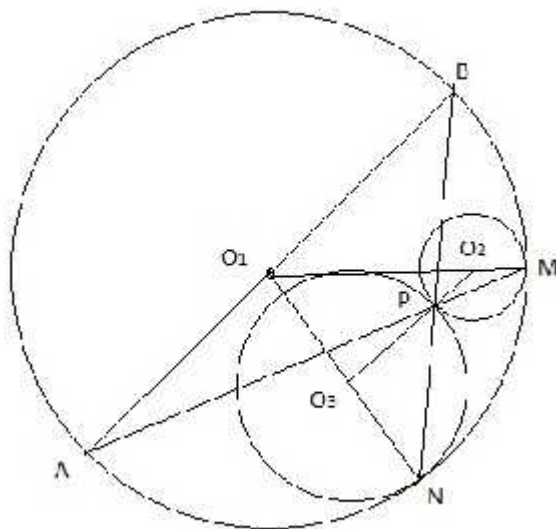
(. 2).

k_1, k_2, k_3

k_1, k_2, k_3
2



. 1



.2

1 . H_1 M $H_1, H_2 H_3.$
 $k_1 k_2;$ H_2 $k_1 k_2$
 $k_2 k_3,$ N $k_2 k_3$
 $k_3 k_1.$ $H_3 \cdot H_2 \cdot H_1$
 A H_1 $O_1 - k_1.$
 $k_3,$ $A B$ $O_1.$ $P k_2$
 $B.$

2 . O_1MA O_2MP
 ($\angle MO_1A = \angle MO_2P$)
 $O_1A \parallel O_2P.$ $[O_1A) [O_2P)$
 $k_1 k_2,$
 $O_1NB O_3NP$ $O_1B \parallel O_3P.$ $[O_2P)$
 $[O_3P)$ $[O_1A) \parallel [O_1B).$
 $[O_1A) [O_1B)$

4.

5. $m = n, x = 1/(2m). m < n. m = 1, n = 2,$
 $x = 1/3.$

$m, n -$

m, n

$x (m, n)$

$1, m < n, n = 3$

m, n

$p, q,$

$pm + qn = 1.$

$m/(2n),$

$(m+2)/(2n), \dots, (m+2n)/(2n)$

n

$[m/(2n), (m+2n)/2n] 1,$

$1/2.$

$1/n.$

$1/2.$

$-$

$(m+2k)/(2n).$

$|1/2 - (m + 2k)/(2n)|$

$1/(2n) = 1/6.$

$p' = kp, q' = kq.$

$p'm + q'n = k;$

$p'm = k - q'n;$

$\{(p'm)/n\} = k/n.$

$x = p'/n + 1/(2n)$

$\{nx\} = 1/2$

$\{mx\} = \{(2p'm+m)/(2n)\} = \{(2k+m)/(2n)\} \in [1/3, 2/3].$

x . (u,v)
 $u = (m/n)v$ u n .
 $m/n,$
 $(0,0)$ (m, n) .
 $,$
 $,$
 $,$
 0 u, v 1
 $,$
 $,$
 $u,$ $v,$
 $1/6.$ x
 $,$ $n.$