

10.1.) , 4; 5; 6. : 2; 3; 6? ,
 :) , ;) ?) . . . 9.1.

10.2. , : $\sqrt{x^2+y} + \sqrt{y^2+x} \geq \sqrt{x^2+x} + \sqrt{y^2+y}$.
 ()
 $\sqrt{(x^2+y)(y^2+x)} \geq \sqrt{(x^2+x)(y^2+y)}$,
 $x^3+y^3 \geq x^2y+y^2x \Leftrightarrow (x+y)(x^2-xy+y^2) \geq (x+y)xy \Leftrightarrow$
 $(x+y)(x-y)^2 \geq 0$.

10.3. 10×10 100 ,
 ?
 : . . . ($x \geq y$) , : $xy=1$ () $x-y=1$ ()
). , $x = \frac{\sqrt{5}+1}{2}$, $y = \frac{\sqrt{5}-1}{2}$.
 10×10 .
 , . . $10 = nx + my$, m, n .
 $10 = \frac{m+n}{2}\sqrt{5} + \frac{m-n}{2}$, $m+n \neq 0$, :

10.4. , , 5^{100} ()
 . . . 9.4.

10.5. $0 < a < 1$) . MN) MN .
) OMN .
 :) $2\sqrt{1-a^2}$;) $a \geq \frac{\sqrt{2}}{2}$ $\frac{1}{2}$; $a < \frac{\sqrt{2}}{2}$
 $a\sqrt{1-a^2}$.) ,
 $MA \cdot AN = (1+a)(1-a)$.
 $MN = MA + AN \geq 2\sqrt{MA \cdot AN} = 2\sqrt{1-a^2}$, $MA = AN$, . . MN ,
 $\alpha = \angle MON$. , $0 < \alpha \leq \pi$
 (α π , MN) , A).
 $S_{MON} = \frac{1}{2}R^2 \sin \alpha = \frac{1}{2} \sin \alpha$, $\sin \alpha$. $M_0N_0 \perp OA$ (. .
)) $\alpha_0 = 2 \arccos a -$ M_0ON_0 .
 , $\alpha_0 \leq \alpha$ MN , . . $MN = 2 \sin \frac{\alpha}{2}$, $\frac{\alpha}{2} \leq \frac{\pi}{2}$)
 , MN α . $a \geq \frac{\sqrt{2}}{2}$, $\alpha_0 \leq \frac{\pi}{2}$
 , MN , $\alpha = \frac{\pi}{2}$ (. .
 MN α π). $a < \frac{\sqrt{2}}{2}$, $\alpha_0 > \frac{\pi}{2}$
 $\alpha \geq \alpha_0 > \frac{\pi}{2}$ $\sin x$,
 $\sin r$ $\alpha = \alpha_0$.