

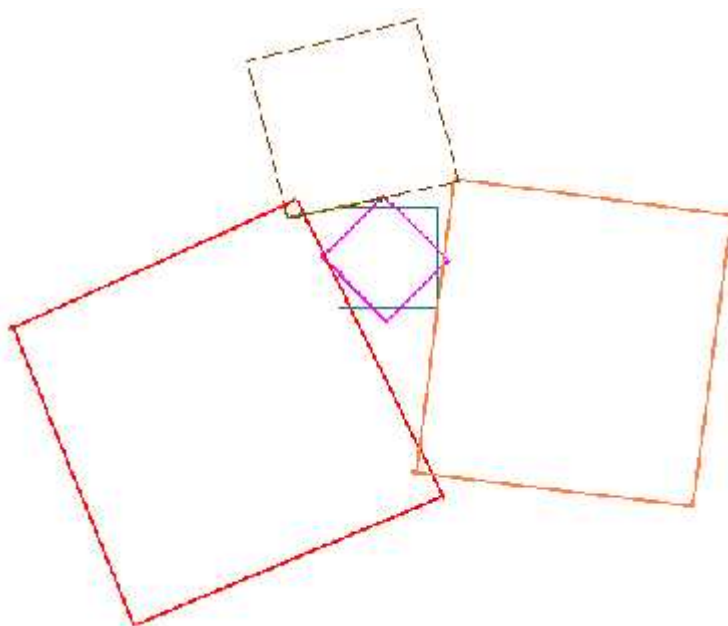
11

1. $(a+b+c)^2 \leq 1$

$a \geq b \geq c$ $ab \geq b^2, ac \geq c^2, bc \geq c^2.$

$(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc \geq a^2 + b^2 + c^2 + 2b^2 + 4c^2,$

2.



3.

$x^8 - x^7 + 2x^6 - 2x^5 + 3x^4 - 3x^3 + 4x^2 - 4x + \frac{5}{2} = (x-1)(x^7 + 2x^5 + 3x^3 + 4x) + \frac{5}{2}$

$$x \quad (0, 1),$$

$$0 < x < 1.$$

$$(x-1)(x^7 + 2x^5 + 3x^3 + 4x) \geq x(x-1) + 2x(x-1) + 3x(x-1) + 4x(x-1) = 10x(x-1)$$

$$\sqrt{x(1-x)} \leq \frac{x+(1-x)}{2} = \frac{1}{2},$$

$$x = \frac{1}{2}.$$

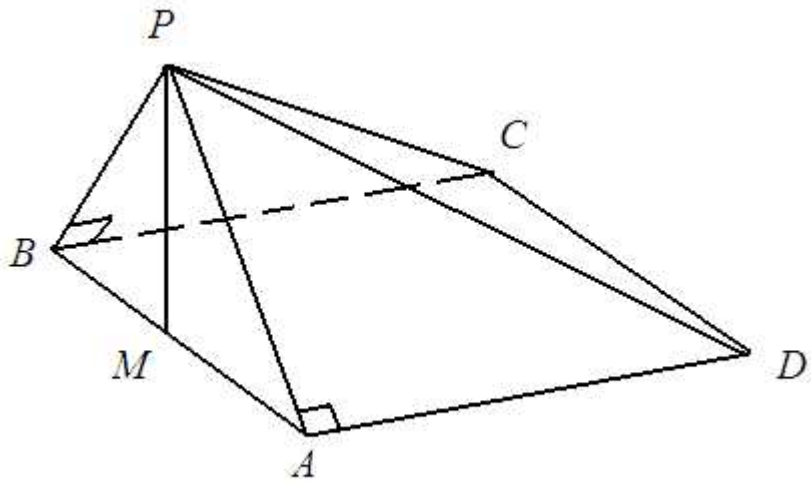
$$10x(x-1) + \frac{5}{2} \geq -\frac{5}{2} + \frac{5}{2} = 0.$$

$$x = \frac{1}{2}.$$

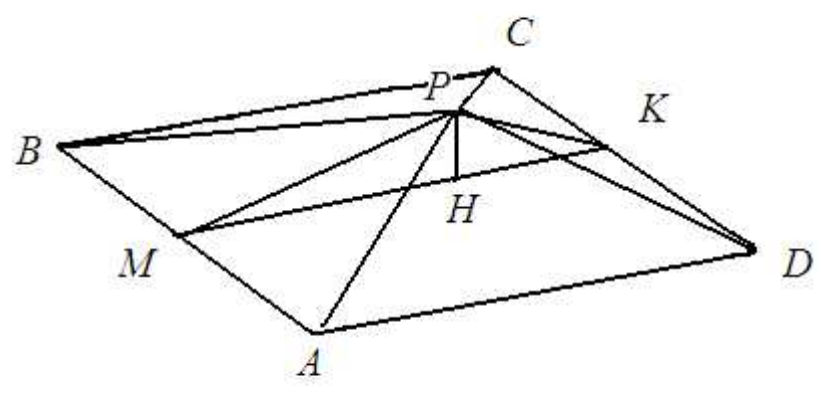
$$x = \frac{1}{2}$$

4.

, PAB. PM – ,
 , PM AB.
 , PAB,
 PAD
 PBC .
 PAD PBC.
 PM $2\sqrt{3}$, $32\frac{\sqrt{3}}{3}$.



PCD
 S. PK
 2.
 PMK,
 P.



PMK

$$S_{PMK} = \frac{1}{2} MK \cdot h = 2\sqrt{3}, \quad h = \sqrt{3}, \quad 16\frac{\sqrt{3}}{3}.$$

$$: 16\frac{\sqrt{3}}{3}, 32\frac{\sqrt{3}}{3}$$

5.

Γ ,

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Γ 3024.
 v_0
 $d(v)$
 v
 $d(v)$
 v_1 v_2
 $d(v_1) = d(v_2)$
 $d(v_1) < d(v_2)$ $d(v_1)+2 \leq d(v_2)$
 v_2 v_1 v_2
 $d(v_1)+1$: $d(v_1)$
 v_1 v_2
 v_1 v_2 , $d(v_1) = d(v_2)$
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