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The Congruent numbers of Pythagorean as universal key for decision of the problems P.Fermat, P.Gordan, H.Poincare and A.Beal

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1. Introduction

Unlike well-known , see Neal Koblitz , [1], the Congruent numbers of Pythagorean are calculated as the functions from primitive triplets of Pythagorean :

$$K_{P=u} = \frac{a_0 \cdot b_0}{2} \tag{1}$$

Here

$$(a_0 , b_0) \tag{2}$$

primitive numbers of Pythagorean, which three – tuples calculate on known formulas,

see [2] :

$$\begin{aligned} a_0 &= v^2 - u^2 \\ b_0 &= 2 \cdot v \cdot u \\ c_0 &= v^2 + u^2 \end{aligned} \tag{3}$$

Here numbers

$$v > u \tag{4}$$

are the numbers of various evenness taken from endless series of natural numbers.

If go along natural row of numbers :

$$N = 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , ... \qquad (5)$$

possible calculate endless row congruous numbers of Pythagorean.

Graduate Texts in Mathematics 97

Neal Koblitz

Introduction to Elliptic Curves and Modular Forms

Springer-Verlag
New York Berlin Heidelberg Tokyo
1984

Н.Коблиц

Введение в эллиптические кривые и модулярные формы

Перевод с английского
О. В. Огиевецкого

под редакцией
Ю. И. Манина

Москва «Мир» 1988

Example of the consequent calculation such numbers see below

Sequence of the calculations

№	1.	v=2 и u=1	$(a_0 = 3 , b_0 = 4) \Rightarrow (K_{P=1} = 6)$
……	2.	v = 3 и u= 2	$(a_0 = 5 , b_0 = 12) \Rightarrow (K_{P=2} = 30) = 3$
	3.	v=4 и u=3	$(a_0 = 7 , b_0 = 24) \Rightarrow (K_{P=3} = 84) = 3$
	4.	v=5 и u=4	$(a_0 = 9 , b_0 = 40) \Rightarrow (K_{P=4} = 180) = 9$
	5.	v=6 и u =5	$(a_0 = 11 , b_0 = 60) \Rightarrow (K_{P=5} = 330) = 6$
	6.	v=7 и u= 6	$(a_0 = 13 , b_0 = 84) \Rightarrow (K_{P=6} = 546) = 6$
	7.	v=8 и u=7	$(a_0 = 15 , b_0 = 112) \Rightarrow (K_{P=7} = 840) = 3$
	8.	v=9 и u=8	$(a_0 = 17 , b_0 = 144) \Rightarrow (K_{P=8} = 1224) = 9$
	9.	v=10 и u=9	$(a_0 = 19 , b_0 = 180) \Rightarrow (K_{P=9} = 1710) = 9$
…..	10.	v=11 и u=10	$(a_0 = 21 , b_0 = 220) \Rightarrow (K_{P=10} = 2310) = 6$
№	11.	v=12 и u=11	$(a_0 = 23 , b_0 = 264) \Rightarrow (K_{P=11} = 3036) = 3$

This example demonstrates important characteristic an congruous numbers of Pythagorean.
All numbers of the endless row :

6 , 30 , 84 , 180 , 330 , 546 , 840 , 1224 , 1710 , 2310 , 3036 , …. **(6)**

numeralogical grow shorter before numerals , which short numeral 3 :

30 = 3+0=3
84=8+4=12=1+2=3
180=1+8+0=9
330=3+3+0=6
546=5+4+6=15=1+5=6 **(7)**
840=8+4+0=12=1+2=3
1224=1+2+2+4=9
………………………

In accord [2] exist multivariate congruous numbers of Pythagorean.

Exists nine (three three-tuples) the invariants right-angled triangles :

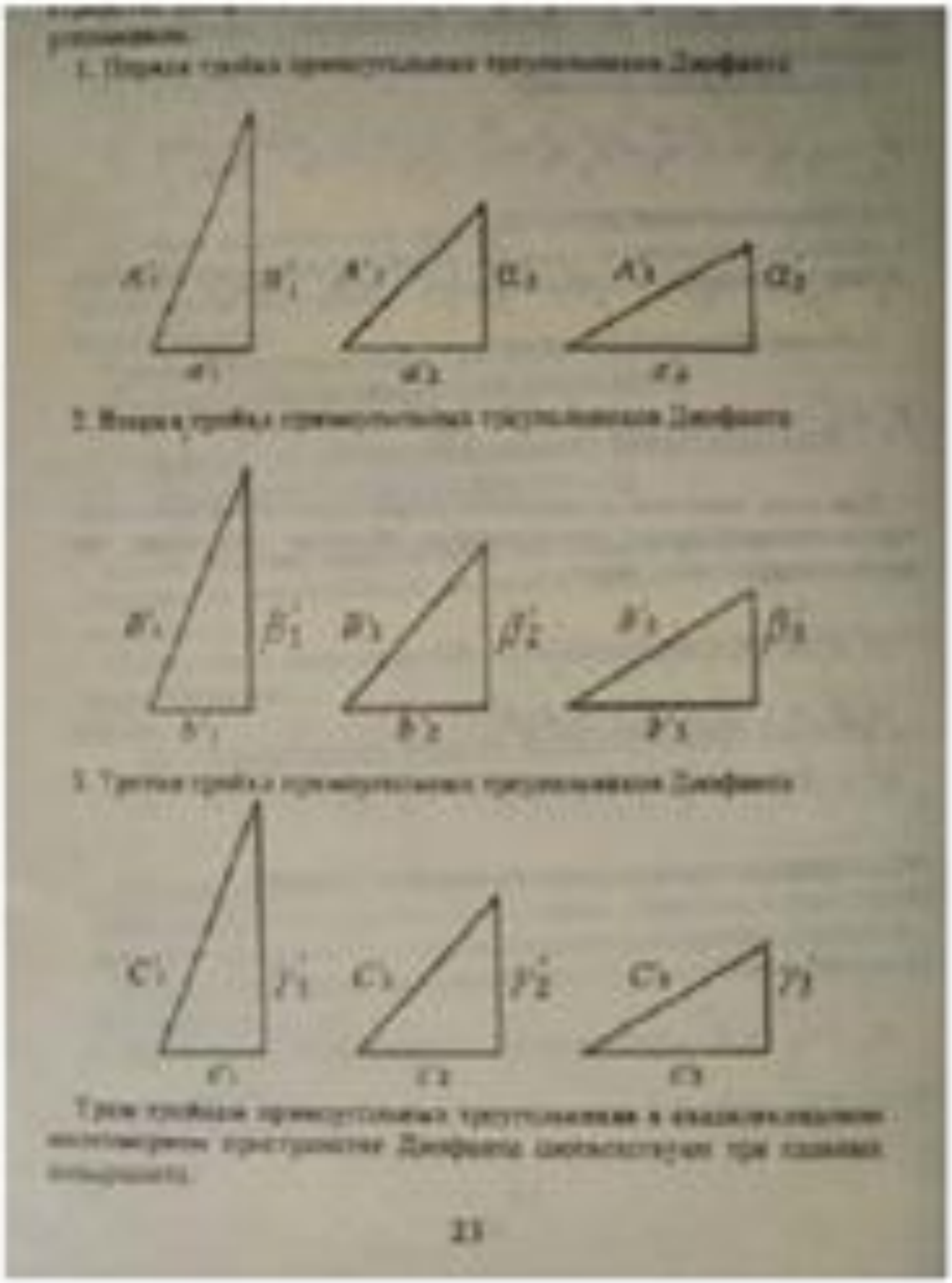

Photo 1

Note:
This photography from book [3]

Following Photo 1 , composition of the formulas for calculation of the areas of a the invariants right-angled triangles of Pythagorean:

$$\mathbf{n}_{\alpha} = \left[\left(\mathbf{n}'_1 = \frac{\mathbf{a}'_1 \cdot \alpha'_1}{2}\right) = \left(\mathbf{n}'_2 = \frac{\mathbf{a}'_2 \cdot \alpha'_2}{2}\right) + \left(\mathbf{n}'_3 = \frac{\mathbf{a}'_3 \cdot \alpha'_3}{2}\right)\right] \tag{8}$$

$$\mathbf{n}_{\beta} = \left[\left(\mathbf{n}''_1 = \frac{\mathbf{b}'_1 \cdot \beta'_1}{2}\right) = \left(\mathbf{n}''_2 = \frac{\mathbf{b}'_2 \cdot \beta'_2}{2}\right) = \left(\mathbf{n}''_3 = \frac{\mathbf{b}'_3 \cdot \beta'_3}{2}\right)\right] \tag{9}$$

$$\mathbf{n}_{\Upsilon} = \left[\left(\mathbf{n}'''_1 = \frac{\mathbf{c}'_1 \cdot \Upsilon'_1}{2}\right) = \left(\mathbf{n}'''_2 = \frac{\mathbf{c}'_2 \cdot \Upsilon'_2}{2}\right) = \left(\mathbf{n}'''_3 = \frac{\mathbf{c}'_3 \cdot \Upsilon'_3}{2}\right)\right] \tag{10}$$

Invariants numbers :

$$\boldsymbol{n}_{\alpha} \ , \ \boldsymbol{n}_{\beta} \ , \ \boldsymbol{n}_{\Upsilon}$$

are multivariate congruous numbers of Pythagorean.

The formulas for calculation components

$$\boldsymbol{n}_{\alpha} \ , \ \boldsymbol{n}_{\beta} \ , \ \boldsymbol{n}_{\Upsilon}$$

See (4) ,

$$\mathbf{a}'_1 = \mathbf{a}_0 \cdot \sqrt{\mathbf{a}_0^{\mathbf{n}-2}} \tag{11}$$

$$\alpha'_1 = \frac{\mathbf{a}_0}{3} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n}-2} + \mathbf{b}_0^{\mathbf{n}-2} + \mathbf{c}_0^{\mathbf{n}-2}}{\sqrt{\mathbf{a}_0^{\mathbf{n}-2}}}\right] \tag{12}$$

$$\mathbf{a}_2' = \mathbf{a}_0 \cdot \sqrt{\boldsymbol{b}_0^{\mathbf{n-2}}} \tag{13}$$

$$\boldsymbol{\alpha}_2' = \frac{\mathbf{a}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}}+\mathbf{b}_0^{\mathbf{n-2}}+\mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\mathbf{b}_0^{\mathbf{n-2}}}}\right] \tag{14}$$

$$\mathbf{a}_3' = \mathbf{a}_0 \cdot \sqrt{\mathbf{c}_0^{\mathbf{n-2}}} \tag{15}$$

$$\boldsymbol{\alpha}_3' = \frac{\mathbf{a}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}}+\mathbf{b}_0^{\mathbf{n-2}}+\mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\mathbf{c}_0^{\mathbf{n-2}}}}\right] \tag{16}$$

$$\mathbf{b}_1' = \mathbf{b}_0 \cdot \sqrt{\mathbf{a}_0^{\mathbf{n-2}}} \tag{17}$$

$$\boldsymbol{\beta}_1' = \frac{\mathbf{b}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}}+\mathbf{b}_0^{\mathbf{n-2}}+\mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\mathbf{a}_0^{\mathbf{n-2}}}}\right] \tag{18}$$

$$\mathbf{b}_2' = \mathbf{b}_0 \cdot \sqrt{\mathbf{b}_0^{\mathbf{n-2}}} \tag{19}$$

$$\boldsymbol{\beta}_2' = \frac{\mathbf{b}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}} + \mathbf{b}_0^{\mathbf{n-2}} + \mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\mathbf{b}_0^{\mathbf{n-2}}}} \right] \tag{20}$$

$$\mathbf{b}_3' = \mathbf{b}_0 \cdot \sqrt{\mathbf{c}_0^{\mathbf{n-2}}} \tag{21}$$

$$\boldsymbol{\beta}_3' = \frac{\mathbf{b}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}} + \mathbf{b}_0^{\mathbf{n-2}} + \mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\mathbf{c}_0^{\mathbf{n-2}}}} \right] \tag{22}$$

$$\boldsymbol{c}_1' = \boldsymbol{c}_0 \cdot \sqrt{\boldsymbol{a}_0^{\boldsymbol{n-2}}} \tag{23}$$

$$\Upsilon_1' = \frac{\boldsymbol{c}_0}{\mathbf{3}} \cdot \left[\frac{\mathbf{a}_0^{\mathbf{n-2}} + \mathbf{b}_0^{\mathbf{n-2}} + \mathbf{c}_0^{\mathbf{n-2}}}{\sqrt{\boldsymbol{a}_0^{\boldsymbol{n-2}}}} \right] \tag{24}$$

$$\boldsymbol{c}_2' = \boldsymbol{c}_0 \cdot \sqrt{\boldsymbol{b}_0^{\boldsymbol{n-2}}} \tag{25}$$

$$\Upsilon_2' = \frac{c_0}{3} \cdot \left[\frac{\mathbf{a_0^{n-2}} + \mathbf{b_0^{n-2}} + \mathbf{c_0^{n-2}}}{\sqrt{b_0^{n-2}}}\right] \qquad (26)$$

$$c_3' = c_0 \cdot \sqrt{c_0^{n-2}} \qquad (27)$$

$$\Upsilon_3' = \frac{c_0}{3} \cdot \frac{\left[\mathbf{a_0^{n-2}} + \mathbf{b_0^{n-2}} + \mathbf{c_0^{n-2}}\right]}{\sqrt{c_0^{n-2}}} \qquad (28)$$

Resume

Invariants numbers :

n_α , n_β , n_Υ

essence members for endless series equations

$$\mathbf{n_\alpha} + \mathbf{n_\beta} = \mathbf{n_c} \qquad (29)$$

This - an equivalent of the equation P.Fermat

$$\mathbf{x^n} + \mathbf{y^n} = \mathbf{z^n} \qquad (30)$$

for all $\mathbf{n \geq 2}$

Result

Exist to be an identical equality

$$n_\alpha \equiv F'_a \quad (31)$$

$$n_\beta \equiv F'_b \quad (32)$$

$$n_\Upsilon \equiv F'_c \quad (33)$$

and identical formulas for calculation endless series roots of the Fermats equations

$$x = \sqrt[n]{n_\alpha} = \sqrt[n]{F'_a} \quad (34)$$

$$y = \sqrt[n]{n_\beta} = \sqrt[n]{F'_b} \quad (35)$$

$$\boldsymbol{z} = \sqrt[n]{\boldsymbol{n}_\Upsilon} = \sqrt[n]{\boldsymbol{F'_c}} \quad (36)$$

Here , in accord [3] and [4] :

$$\mathbf{F'_a} = \frac{1}{3} \cdot \left(\mathbf{a'^2_1} + \mathbf{a'^2_2} + \mathbf{a'^2_3}\right) =$$

$$= \frac{\mathbf{a_0^2}}{3} \cdot \left(\mathbf{a_0^{n-2}} + \mathbf{b_0^{n-2}} + \mathbf{c_0^{n-2}}\right) \quad (37)$$

$$\mathbf{F'_b} = \frac{\mathbf{1}}{\mathbf{3}} \cdot \left(\mathbf{b'^2_1} + \mathbf{b'^2_2} + \mathbf{b'^2_3}\right) =$$

$$= \frac{\mathbf{b}_0^2}{3} \cdot \left(\mathbf{a}_0^{\mathbf{n}-2} + \mathbf{b}_0^{\mathbf{n}-2} + \mathbf{c}_0^{\mathbf{n}-2}\right) \qquad (38)$$

$$\mathbf{F}_c' = \frac{1}{3} \cdot \left(\mathbf{c}_1'^2 + \mathbf{c}_2'^2 + \mathbf{c}_3'^2\right) =$$

$$= \frac{\mathbf{c}_0^2}{3} \cdot \left(\mathbf{a}_0^{\mathbf{n}-2} + \mathbf{b}_0^{\mathbf{n}-2} + \mathbf{c}_0^{\mathbf{n}-2}\right) \qquad (39)$$

Herewith exist to be a correlations, described in work [5] and [6] H.Poincare :. In work [4] Poincare confirms:

If three integers of the number but:

$$\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3 \qquad (40)$$

which mutually simple; that always exists nine integers numbers , which satisfy following condition:

$$\mathbf{a}_1 \cdot \boldsymbol{\alpha}_1 + \mathbf{a}_2 \cdot \boldsymbol{\alpha}_2 + \mathbf{a}_3 \cdot \boldsymbol{\alpha}_3 = 1 \qquad (41)$$

$$\mathbf{a}_1 = \boldsymbol{\beta}_2 \cdot \Upsilon_3 - \boldsymbol{\beta}_3 \cdot \Upsilon_2 \qquad (42)$$

$$\boldsymbol{a}_2 = \boldsymbol{\beta}_3 \cdot \Upsilon_1 - \boldsymbol{\beta}_1 \cdot \Upsilon_3 \qquad (43)$$

$$\mathbf{a}_3 = \boldsymbol{\beta}_1 \cdot \Upsilon_2 - \boldsymbol{\beta}_2 \cdot \Upsilon_1 \qquad (44)$$

Secondary brought forms H.Poincare lead to restrictions parameter A and B in the manner of:

$$\boldsymbol{\lambda} > \boldsymbol{A} \ \text{ and } \ \boldsymbol{\lambda} < \boldsymbol{B} \qquad (45)$$

With reference to such binary form, as equation elliptical crooked G.Fray, [7] :

$$\mathbf{Y}^2 = (\mathbf{X} - \mathbf{A}) \cdot \mathbf{X} \cdot (\mathbf{X} + \mathbf{B}) \qquad (46)$$

this equivalent statement:

$$\mathbf{a_1 \neq \beta_2 \cdot \Upsilon_3 - \beta_3 \cdot \Upsilon_2 = 0} \tag{47}$$

$$\mathbf{a_1 \neq \beta_2 \cdot \Upsilon_3 - \beta_3 \cdot \Upsilon_2 = 0} \tag{48}$$

$$\mathbf{a_3 \neq \beta_1 \cdot \Upsilon_2 - \beta_2 \cdot \Upsilon_1 = 0} \tag{49}$$

In this case exist to be three equalities

$$\mathbf{a'_1 \cdot \alpha'_1 + a'_2 \cdot \alpha'_2 + a'_3 \cdot \alpha'_3 = 1} \tag{50}$$

This form has three equivalent transformations :

$$\mathbf{\frac{(a'_1 \cdot \alpha'_1 + a'_2 \cdot \alpha'_2 + a'_3 \cdot \alpha'_3)}{3 \cdot (n_\alpha \equiv F'_a)} = 1} \tag{51}$$

$$\mathbf{\frac{(b'_1 \cdot \beta'_1 + b'_2 \cdot \beta'_2 + b'_3 \cdot \beta'_3)}{3 \cdot (n_\beta \equiv F'_b)} = 1} \tag{52}$$

$$\mathbf{\frac{(c'_1 \cdot \Upsilon'_1 + c'_2 \cdot \Upsilon'_2 + c'_3 \cdot \Upsilon'_3)}{3 \cdot (n_\Upsilon \equiv F'_c)} = 1} \tag{53}$$

As a result - a restriction (45) eliminate.
I form new conditions for binary form (46):

$$\mathbf{A = X - a_0^n = (b_0^n - a_0^n)} \tag{54}$$

$$\mathbf{B = c_0^n - X = c_0^n - b_0^n = a_0^n} \tag{55}$$

$$\mathbf{X = b_0^n} \tag{56}$$

$$\mathbf{(X - A) = a_0^n} \tag{57}$$

$$\mathbf{(X + B) = c_0^n} \tag{58}$$

It is conditions for non-modular elliptic curves , see [8] :

2.Physical interpretation

In work [5] Poincare wrote:

Arithmetical study of the uniform forms most of all occupies specialist on geometries
In all forms geometry is present in the manner of numbers 3
Number 3 - a sign three-dimensional space of Euclid.
Here is that write about this space authors [9]:
Geometric deskside space depends on time
But changes not space-time
Changes space, three-dimensional space

Authors [9] write: Three-dimensional space adequately physical vacuum

Central point consists in following

Started space not at all is empty

It presents itself receptacle of the most tempestuous physical processes

All elementary particles are born In physical vacuum , refer to.[10[.

In accord study this ensemble elementary particles , See reference № 3 an http://yvsevolod-26.narod.ru/index.html , all of these are subordinated stood law three numbers

$$\mathbf{3 = 1 + 2} \qquad (59)$$

Known that all systems of the physical units take its begin in three base units

System CGS has a base in the manner 3 of dimensioned units

$$\mathbf{1 = \dim} \boldsymbol{cm} \tag{60}$$

$$\mathbf{1 = \dim} \boldsymbol{g} \tag{61}$$

$$\mathbf{1 = \dim} \boldsymbol{s} \tag{62}$$

Fundamental systems of the physical units Plank and author given messages also have a base as three fundamental units

$$\mu_{оя} = \frac{\mu_о}{3} \approx 2.6136368 \cdot 10^{-48} \text{г}$$

$$r_{оя} \approx 1.6409300 \cdot 10^{-21} \text{ см}$$

$$\tau_{оя} \approx 5.4735533 \cdot 10^{-32} \text{ с}$$

$$\rho_{оя} = \frac{\mu_{оя}}{\frac{4}{3}\pi \cdot r_{оя}{}^3} = \frac{2.6136368 \cdot 10^{-48}}{1.8507969 \cdot 10^{-62}} = \tag{63}$$

$$= 1.41221683 \cdot 10^{14} \text{ г/см}^3$$

$$c \approx \frac{r_{оя} \approx 1.6409300 \cdot 10^{-21} \text{ см}}{\tau_{оя} \approx 5.4735533 \cdot 10^{32} \text{ с}} =$$

$$= 2.9979246 \cdot 10^{10} \text{ см/с}$$

which conjugate at the speed of light in vacuum and with system of the units Max Planck:

$$\mathbf{M^* = \sqrt{\frac{\hbar c}{G}} = 2.177 \cdot 10^{-5}\ г}$$

$$\mathbf{L^* = \sqrt{\frac{\hbar G}{c^3}} = 1.616 \cdot 10^{-33}\ см}$$

$$\mathbf{T^* = \sqrt{\frac{\hbar G}{c^5}} = 5.391 \cdot 10^{-44}\ с}$$

$$\mathbf{\rho^* = \frac{M^*}{L^{*3}} = \frac{c^5}{\hbar G^2} = 5.157 \cdot 10^{93}\ г/см^3}$$

$$\mathbf{c = \frac{L^*}{T^*} = \frac{\sqrt{\frac{\hbar G}{c^3}}}{\sqrt{\frac{\hbar G}{c^5}}} \approx 2.997 \cdot 10^{10}\ см/с} \qquad (64)$$

3. General conclusion

In all forms (37) - (53) dominates number three and vague pair non dimensional numbers.
Here all correspond to paradigm of Pyhagorean

"Begin whole-unit.
The Unit, as prime cause, belongs to the vague двоица; from unit and vague -ness come the numbers; from чисел-points; from point-lines; from them-flat figures; from flat-three-dementional figures; of them - voluptuous perceived bodies, which generate the world animate and reasonable"

Plato, adopted the paradigm of Pythgorean and of Demokrit, created its the conception, resulting from the paradigm of Pythagorean and of Demokrit.

The vague-ness compose the Golden ratio (Divina Proportione0 of Plato.

The Vhole so pertains to most, as Big pertains to Minority

$$\frac{\mathbf{Vhole}}{\mathbf{Big}} = \frac{\mathbf{Big}}{\mathbf{Minority}} \qquad (65)$$

Numeric equivalent

$$\frac{\mathbf{3.55555555...}}{\mathbf{1.77777777...}} = \frac{\mathbf{1.7777777...}}{\mathbf{0.88888888...}} = \mathbf{2} \qquad (66)$$

If

$$\mathbf{3.55555555 ... = 2.66666666 ... + 0.88888888 ...} \qquad (67)$$

And

$$\mathbf{2 = \lim \frac{1.77777777...}{0.88888888...}} \qquad (68)$$

Integer 2 is basis for Avogadro constant [11]:

$$\mathbf{N_A = 2 \cdot 2^{78} = \frac{(2 \cdot X \cdot Y \cdot Z)^{16}}{2} = 6.0446291 \cdot 10^{23}} \qquad (69)$$

$$\mathbf{2^2 = 4 ,\quad 2^3 = 8, \quad 2^4 = 16, \quad 2^5 = 32, ... 2^{79} = 6.0446291 \cdot 10^{23},...}$$

Here :

$$\mathbf{X = \frac{32}{18} = 1.777777777 ...} \qquad (70)$$

$$\mathbf{Y = \frac{18}{8} = 2.25} \qquad (71)$$

$$\mathbf{Z = \frac{8}{2} = 4} \qquad (72)$$

rational numbers , as function electrons envelope for all atoms to actinoids :

$$\mathbf{32 \cdot m_e \;;\;\; 18 \cdot m_e \;;\;\; 8 \cdot m_e \;;\;\; 2 \cdot m_e} \tag{73}$$

Curious fact

$$2 = \frac{46\,500}{23\,250} = \frac{59\,300}{29\,650} = \frac{45\,650}{22\,825} = \frac{74\,600}{37\,300} = \frac{54\,400}{27\,200} = \frac{57\,400}{28\,700} =$$
$$= \frac{40\,500}{20\,250} = \frac{32\,200}{16\,100} = \frac{35\,400}{17\,700} = \frac{62\,700}{31\,350} = \frac{41\,500}{20\,750} = \frac{53\,400}{26\,700} = \frac{603\,550}{301\,775} = 2 \tag{74}$$

This - a data from section of the Number of the Old testament to Bibles

Masse of protons:

$$\boldsymbol{m_p = \left(2 \times \mu'_{оя}\right) \times \left[2 \times (2^{26})^3\right] + \left[6.7019968 \times 10^{23} \times \left(2 \times m_\gamma\right)\right] =}$$
$$\boldsymbol{= 1.6735473 \times 10^{-24}\ g} \tag{75}$$

If

$$\mathbf{m_\gamma = 7 \times 10^{-22} \frac{MeV}{c^2} =}$$
$$\mathbf{= 1.121442 \times 10^{-27}\ erg =} \tag{76}$$
$$\mathbf{= 1.2485438 \times 10^{-48}\ g}$$

the upper case of the mass gamma-quantum, refer to [12].

In formula (76) is used number Avogadro:

$$\mathbf{N_A = 2 \times (2^{26})^3 = 2^{79} = 6.446291^{23}}$$

And, finally,

For the systems hypercomplex numbers possible form two associate Kvaterions of Pythagorean:

$$H_{P1} = (a_0 + ib_0) + (b_0 + ia_o)$$
$$H_{P2} = (a_o - ib_0) + (b_o - ia_0) \quad (77)$$

from component parts which possible build matrix

2

$$A = \begin{pmatrix} (a_0 + ib_0) & (b_0 + ia_0) \\ (a_0 - ib_0) & (b_0 - ia_0) \end{pmatrix} \quad (78)$$

The Determinant of this matrix is:

$$D = 2 \cdot i \cdot c_0^{\,2} \quad (79)$$

In him is marked theorem of Pythagorean

$$c_0^{\,2} = a_0^{\,2} + b_0^{\,2} \quad (80)$$

It is equivalent for unity vector-scalar

$$S = s \cdot s^* = (a_0 + i \cdot b_0) \cdot (a_0 - i \cdot b_0) =$$
$$= a_0^{\,2} + b_0^{\,2} = c^2 \quad (81)$$

$$|S| = |s \times s^*| = |s| \cdot |s^*| \cdot \sin Q$$

Herewith, with reference to to first primitive three-tuple

$$(a_0 = 3,\ b_0 = 4,\ c_0 = 5) \quad (82)$$

The Duplicated square of the determinant of the mentioned matrix, way numeralical reductions, happens to negative count; calculate; list 2:

$$2 \cdot D^2 = 2 \cdot (2 \cdot i \cdot c_0^2) = -200 = -2 \qquad (83)$$

This there is manifestation negative sides numbers 310952 = 2 of Hipparchos .(190 - 125 before our era.)

The Known, [1] , what role has played the ensemble of the matrixes:

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \qquad (84)$$

in theories an the modular forms, in proof of the hypothesis Shimura-Tniyam and in proof, founded on this hypothesis, the Last theorem Ferrmat.

The Author of this article has assumed as a basis their own studies the most simplest matrix:

$$P = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \qquad (85)$$

the determinant which is count; calculate; list two:

$$\text{Det P} = (3 \times 2) - (1 \times 4) = 2 \qquad (86)$$

Decission Problems of G.Gordans and A.Beal – see [8].

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Reference

[1] . N.Koblitz, Introduction to Elliptic Curves and Modular Forms, Springer-Verlag, New York, Berlin, Heidelberg, Tokyo, 1984.

[2]. R. Courant and H.Robbins, What is Mathematics ? , Oxford University Press, Oxford, New York, Toroto, 1966, §3, p.p.65-67

3. V.S. Yarosh , Denouement of the multicentury enigma of Diophant and Fermat (The Great Fermat theorem is finally proved for all n > 2), M., Engineer (1993) , 50 s.

[4]. . V.S. Yarosh , Harmoniya y Symmetriya v mire kongruentnych chisel kak universalny kluch dlya resheniya problem P.Fermat, P.Gordan, A.Puankare, A. Beal

[5]. H.Poincare, Journal L"Ecole, Politechnique, 1881, Cahier 50, 190-253, ,Introduction.

[6]. H.Poincare, Journal L"Ecole, Politechnique, 1882, Cahier 51,45-91,XII.

[7]P.Ribenboim, Fermat"s Last Theorem for Amateur, Springer, XI¸2

[8].V.S.Yarosh, Non-Modular Elliptic Curves- Way for Solutions of Problems of P.Fermat, G.Frey, H.Poincare and A.Beal., http://www.sciteclibrary.ru/rus/avtors/ja.html

[9]. Ch.W.Misner, K.S.Thorn"e, J.A.Wheeler, Gravitation , Vol.3, W.H.Freerman and Company, San Francisco, 1973, §43.1, §44.3

[10].V.S.Yarosh , Site http://yvsevolod-26.narod.ru/index.html , reference № 3.

[11]. L.Michel, Applications of Group Theory to Qantum Physics Algebraic Aspects, Lecture Notes in Physics, Vol.5, Springer-Verlag, Berlin*Heidelberg-New York, 1970, Introduction.

[12]. H.Frauenfelder and E.Henley, Subatomic Physic, University of Washngton, New Jersey, 1974, p.p. 662-693.