Theory of Numbers

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The presented Numbers Theory is based on the basic theorem of arithmetic, that any number that is not a prime number or number 1, can be represented by the product of prime numbers. The most important assumption of the theory is the division of all natural numbers into the original and separable subsets, according to the divisibility of numbers. In this way, the following subsets have been extracted:

a) N_2 – set of numbers divisible by number 2,

b) N_3 – set of numbers divisible by number 3 and at the same time indivisible by number 2,

c) N_5 – set of numbers divisible by number 5 and at the same time indivisible by numbers 2 or 3,

d) N_7 – set of numbers divisible by number 7 and at the same time indivisible by numbers 2, 3 or 5,

e) [P ∪ Q] - set of all numbers indivisible by the numbers 2,3,5 or 7 and primary number 1,

f) Set of primary dividers: {2,3,5,7}.

The Numbers Theory assumes the theory about the origin of all natural numbers:

$$\textbf{\textit{The Theory of the origin of set of all natural numbers}}$$

$$\textbf{\textit{based on the primary number|set }}\{\mathbf{1}\}:$$

step 1:

$$\{\mathbf{1}\} \rightarrow (\mathbf{1}+\mathbf{1}) = \{\mathbf{2}\} - \textit{number } \mathbf{2} - \textit{primary divider}$$

$$\{\mathbf{2}\} \rightarrow \{\mathbf{2n}\} - \textit{set of all natural numbers divisible by } \mathbf{2} \textit{ and number } \mathbf{2}$$

step 2:

$$(\{\mathbf{2n}\} + \{\mathbf{2}\}) \rightarrow \{\mathbf{2(n+1)}\} - \textit{set of all natural numbers divisible by } \mathbf{2}$$

step 3:

$$(\mathbf{1}+\mathbf{2}) = \{\mathbf{3}\} - \textit{number } \mathbf{3} - \textit{primary divider}$$

$$\{\mathbf{3}\} \rightarrow \{\mathbf{3n}\} - \textit{set of all natural numbers divisible by } \mathbf{3}$$

step 4:

$$(\mathbf{2}+\mathbf{3}) = \{\mathbf{5}\} - \textit{number } \mathbf{5} - \textit{primary divider}$$

$$\{\mathbf{5}\} \rightarrow \{\mathbf{5n}\} - \textit{set of all natural numbers divisible by } \mathbf{5}$$

$$(\mathbf{2}+\mathbf{5}) = \{\mathbf{7}\} - \textit{number } \mathbf{7} - \textit{primary divider}$$

$$\{\mathbf{7}\} \rightarrow \{\mathbf{7n}\} - \textit{set of all natural numbers divisible by } \mathbf{7}$$

step 5:

$$(\{\mathbf{3}\} * \{\mathbf{2n}\}) \rightarrow \{\mathbf{6n}\} - \textit{set of numbers divisible by } \mathbf{6}$$

***step* 6:**

$$(\{6\boldsymbol{n}\} + \{3\}) \rightarrow \{6\boldsymbol{n} + 3\} = \{3(2\boldsymbol{n} + 1)\}$$

***cause*:**

$$\forall \boldsymbol{n}, \boldsymbol{m} \in \boldsymbol{N}: (2\boldsymbol{n} + 1) \neq 2\boldsymbol{m}$$

$$\{6n + 3\} - \textit{set of all natural numbers divisible by } 3$$

$$\textit{and at the same time don't divisible by } 2$$

***step* 7:**

$$(\{5\} + \{6\boldsymbol{n}\}) \rightarrow \{6(\boldsymbol{n} + 1) - 1\}$$

$$(\{7\} + \{6\boldsymbol{n}\}) \rightarrow \{6(\boldsymbol{n} + 1) + 1\}$$

$$\{6(\boldsymbol{n} + 1) - 1\} \cup \{6(\boldsymbol{n} + 1) + 1\} = \{6(\boldsymbol{n} + 1) \pm 1\}$$

***cause*:**

$$\forall \boldsymbol{n}, \boldsymbol{m} \in \boldsymbol{N}: (2 * 3\boldsymbol{n} \pm 1) \neq 2\boldsymbol{m} \textit{ or } 3\boldsymbol{m}$$

***then*:**

$$\{6(\boldsymbol{n} + 1) \pm 1\} - \textit{set of all natural numbers bigger then } 10,$$

$$\textit{don't divisible by } 2 \textit{ or } 3$$

***step* 8:**

***cause*:**

***Any natural number bigger then number* 10:**

***is divisible by* 2**

or

***is divisible by* 3**

or

***is indivisible by* 2 *or* 3**

$$\boldsymbol{then}:$$

$$N = \left[\{1,2,3,5,7\} \cup \left[\bigcup_{n \in N} 2(n+1)\right] \cup \left[\bigcup_{n \in N} 3(2n+1)\right] \cup \left[\bigcup_{n>1 \in N} 6n \pm 1\right]\right]$$

$$\text{Set of all natural numbers } N \text{ conteins } 4 \text{ primary separable subsets.}$$

$$\boldsymbol{and}:$$

$$N = \left[\{1\} \cup \left[\bigcup_{n \in N\{0\}} 2(n+1)\right] \cup \left[\bigcup_{n \in N\{0\}} 3(2n+1)\right] \cup \left[\bigcup_{n \in N} 6n \pm 1\right]\right]$$

DEFINITION AND ARGUMENT (1.1.)

Based on the Theorem of origin of natural numbers:

N – set of all Natural Numbers

$$N = \left[\{1,2,3,5,7\} \cup \left[\bigcup_{n \in N} 2(n+1)\right] \cup \left[\bigcup_{n \in N} 3(2n+1)\right] \cup \left[\bigcup_{n>1 \in N} 6n \pm 1\right]\right]$$

DEFINITION AND ARGUMENT (1.2.)

$$N_2 = \left[\bigcup_{n \in N} 2(n+1)\right]$$

N_2 - set of all natural numbers divisible by number 2

DEFINITION AND ARGUMENT (1.3.)

$$N_3 = \left[\bigcup_{n \in N\{0\}} 3(2n+1) \right]$$

N_3 - set of all natural numbers divisible by number 3 and at the same time don't divisible by number 2

ARGUMENT (1.4.)

$$\left[\bigcup_{n>1 \in N} 6n \pm 1 \right] - \textit{set of all natural numbers bigger then } 10 \textit{ don't divisible by } 2 \textit{ or } 3$$

ARGUMENT (1.5.)

Based on the basic theorem of arithmetic:

$$\forall a \in N:$$

$$a = 2^n * 3^m * 5^s * 7^t * q$$

$$n, m, s, t \in N_{\{0\}};\ q \in Q;$$

$$Q = N \backslash [\{2n\} \cup \{3n\} \cup \{5n\} \cup \{7n\}]$$

ARGUMENT (1.6.)

Based on (1.5.):

$$\forall a \in N:$$

$$2a = 2^n * 3^m * 5^s * 7^t * q\,; \quad n \in N;\ m, s, t \in N_{\{0\}};\ q \in Q$$

$$3(2a+1) = 3^m * 5^s * 7^t * q\,; \quad m \in N;\ s, t \in N_{\{0\}};\ q \in Q$$

DEFINITION AND ARGUMENT (1.7.)

Based on (1.2.), (1.3.) and (1.6.) let:

$$N_2 = \left[\bigcup_{n\in N} 2(n+1)\right] = \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{n\in N\{0\}} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \times \left[\bigcup_{q\in Q} q\right]$$

$$N_3 = \left[\bigcup_{n\in N} 3(2n+1)\right] = \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{n\in N\{0\}} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \times \left[\bigcup_{q\in Q} q\right]$$

ARGUMENT (1.8.)

Based on argument (1.4.):

$$\left[\bigcup_{n>1\in N} 6n \pm 1\right] = \left[\bigcup_{n>1\in N;\quad b\in(P\cup\{1\}); and\ b=1\ if\ (6n\pm1)\in P} b(6n\pm1)\right]$$

Then:

$$for\ b = 1$$

$$(6a \pm 1) = p; \quad p \in P\backslash\{2,3,5,7\}$$

$$for\ b = 5$$

$$5(6n \pm 1) = (30n\ \pm 5) = [(6(5n-1)+1) \cup (6(5n+1)-1)] =$$

$$= 5^s * 7^t * q\,; \quad s \in N;\ t \in N_{\{0\}};\ q \in Q$$

$$for\ b = 7$$

$$7(6n \pm 1) = (42n\ \pm 7) = [(6(7n+1)+1) \cup (6(7n-1)-1)] =$$

$$= 5^s * 7^t * q\,; s \in N_{\{0\}};\ \ t \in N;\ q \in Q$$

$$for\ b \in P\backslash\{2,3,5,7\}$$

$$b(6a \pm 1) = q; \quad q \in [Q\backslash P]$$

DEFINITION AND ARGUMENT (1.9.)

Based on (1.8.):

$$N_5 = \left[\bigcup_{n\in N}(30n \pm \{5\})\right] = \left[\bigcup_{n\in N} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \times \left[\bigcup_{q\in Q} q\right]$$

N_5 is a set of numbers divisible by number 5 and at the same time don't divisible by numbers 2 or 3

DEFINITION AND ARGUMENT (1.10.)

Based on (1.8.):

$$N_7 = \left[\bigcup_{n\in N} 7^n\right] \times \left[\bigcup_{q\in Q} q\right]$$

$$N_7 = \left[\bigcup_{n\in N}(42n \pm \{7\})\right] \setminus \left[\bigcup_{n\in N}(30n \pm \{5\})\right]$$

N_7 is a set of numbers divisible by number 7 and at the same time don't divisible by numbers 2, 3 or 5

ARGUMENT (1.11.)

(About unique of numbers)

Cause number {1} belongs to set Q and ($P_{\{1\}\setminus\{2,3,5,7\}}$) $\subset$ Q,

then:

$$N = \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{n\in N\{0\}} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \cup$$

$$\cup \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{n\in N\{0\}} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \times \left[\bigcup_{p\in(P\setminus\{2,3,5,7\})} p\right] \cup$$

$$\cup \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{n\in N\{0\}} 5^n\right] \times \left[\bigcup_{n\in N\{0\}} 7^n\right] \times \left[\bigcup_{q\in(Q\setminus P\setminus\{1\})} q\right]$$

ARGUMENT (1.12.)

Based on (1.8.):

$$P \subset \left[\{2,3,5,7\} \cup \left[\bigcup_{n>1\in N} 6n \pm 1\right]\right]$$

THEOREM (1.13.)

(About Prime Numbers)

$$\textit{Set of Prime Numbers is realy a sum of set of primary dividers and}$$

$$\textit{set of Odered Prime Numbers without number } 1.$$

$$\textit{Set of Ordered Prime Numbers} = \left[P_{\{2,3,5,7\}} \cup \{1\}\right] \textit{ and}:$$

$$P_{\backslash\{2,3,5,7\}} = \left[\{6\} \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6 * 5\} \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6 * 7\} \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N\{0\}\backslash\{1\}} 2^{2n+1}\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] - 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] - 1\right]$$

PROOF:

Cause (1.12.) and (1.9.), (1.10.):

$$\boldsymbol{first\ we\ check\ when\ the\ numbers\ in\ form\ (6n \pm 1)}$$

$$\boldsymbol{are\ divisible\ by\ 5\ or\ 7}$$

$$\boldsymbol{by\ 5}$$

$$\boldsymbol{(6n \pm 1) \neq 5(6m\ \pm 1) \rightarrow 6n \neq 30m \pm 5 \pm 1}$$

$$\boldsymbol{6n \neq (30m \pm 5 \pm 1) \rightarrow n \neq 5m + \left[(\pm 5 \pm 1) * \frac{1}{6}\right]}$$

$$\boldsymbol{then:}$$

$$\boldsymbol{for\ (6n - 1)}$$

$$\boldsymbol{n \neq 5m + 1; m \in N}$$

$$\boldsymbol{for\ (6n + 1)}$$

$$\boldsymbol{n \neq 5m - 1; m \in N}$$

$$\boldsymbol{by\ 7}$$

$$\boldsymbol{(6n \pm 1) \neq 7(6m\ \pm 1) \rightarrow 6n \neq 42m \pm 7 \pm 1}$$

$$\boldsymbol{6n \neq (42m \pm 7 \pm 1) \rightarrow n \neq 7m + \left[(\pm 7 \pm 1) * \frac{1}{6}\right]}$$

$$\boldsymbol{then:}$$

$$\boldsymbol{for\ (6n + 1)}$$

$$\boldsymbol{n \neq 7m + 1\ ; m \in N}$$

$$\boldsymbol{for\ (6n - 1):}$$

$$\boldsymbol{n \neq 7m - 1; m \in N}$$

Then:

based on (1.12.):

$$P\subset\left[\{2,3\}\cup\left[\bigcup_{(n\neq 7m+1\ ;n\ \neq 5m-1);n,m\in N}(6n+1)\right]\cup\left[\bigcup_{(n\neq 7m-1\ ;n\ \neq 5m+1);n,m\in N}(6n-1)\right]\right]$$

DEFINITION AND ARGUMENT (1.14.)

Let:

$$Q=N\backslash[\{2n\}\cup\{3n\}\cup\{5n\}\cup\{7n\}]$$

Then:

$$Q=\bigcup_{n\in N}[(P_{\{2,3,5,7\}}\cup\{1\})\times(P_{\{2,3,5,7\}}\cup\{1\})]^{\,n}$$

Based on (1.14.):

$$(P_{\{1\}\backslash\{2,3,5,7\}}\times P_{\{1\}\backslash\{2,3,5,7\}})^{1}\subset\left[\{1\}\cup\left[\bigcup_{n>1\ \in N}(6n\pm 1)\right]\cup\left[\bigcup_{n>1\ \in N}(6(6n^{2}\pm 2n)+1)\right]\right]$$

Then:

$$(P_{\{2,3,5,7\}})^{\,2}\subset$$

$$\subset\left[\bigcup_{n>1;\ (n\neq 7m+1\ ;n\ \neq 5m-1);n,m\in N}(6(6n^{2}+2n)+1)\right]\cup$$

$$\cup\left[\bigcup_{n>1;\ (n\neq 7m-1\ ;n\ \neq 5m+1);n,m\in N}(6(6n^{2}-2n)+1)\right]$$

$$\left(P_{\{2,3,5,7\}}\right)^2 \subset \left[\left[\bigcup_{(n\neq 7m+1\ ;n\ \neq 5m-1);n>19,m\in N}(6n+1)\right]\cup\left[\bigcup_{(n\neq 7m-1\ ;n\ \neq 5m+1);n>20\ ,m\in N}(6n-1)\right]\right]$$

$$cause:$$

$$for\ (6a+1)$$

$$a\neq 7m+1\ ;a\ \neq 5m-1$$

$$then:$$

$$a\in\left[\left[\bigcup_{m\in N}(5m-\{2,3,4,5\})\right]\cap\left[\bigcup_{m\in N}(7m+\{2,3,4,5,6,7\})\right]\right]$$

$$we\ check\ when:$$

$$(5a-1)=(7b+1)$$

$$5a=7b+2\rightarrow a=\frac{1}{5}(7b+2)$$

$$m\neq 5^a(7b+2);\ a,b\in N$$

$$7b=5a-2\rightarrow b=\frac{1}{7}(5a-2)$$

$$m\neq 7^b(5a-2);\ a,b\in N$$

$$then\ a\ is\ indivisible\ by\ 5\ or\ 7, but\ can\ be\ 5\ or\ 7$$

$$for\ (6a-1)$$

$$a\neq 7m-1\ ;a\ \neq 5m+1$$

$$then:$$

$$a\in\left[\left[\bigcup_{m\in N}(5m+\{2,3,4,5\})\right]\cup\left[\bigcup_{m\in N}(7m-\{2,3,4,5,6,7\})\right]\right]$$

$$we\ check\ when:$$

$$(5a+1)=(7b-1)$$

$$5a=7b-2$$

$$7b=5a+2$$

$$m \neq 5^a(7b-2);\ a,b \in N$$

$$m \neq 7^b(5a+2);\ a,b \in N$$

$$then\ a\ is\ indivisible\ by\ 5\ or\ 7\ and\ can't\ be\ 5\ or\ 7$$

$$then:$$

$$\left(P_{\{2,3,5,7\}}\right)^2 = \{6a+1\} \cup \{6a-1\}:$$

$$where:$$

$$a\ can\ be\ divided\ by\ 2\ or\ 3$$

$$and\ at\ the\ same\ time\ is\ indivisible\ by\ 5\ or\ 7$$

$$except:$$

$$for\ form\ (6a+1),$$

$$a\ can\ be\ a\ number\ 5\ or\ 7,$$

$$but\ at\ the\ same\ time\ a\ must\ be\ indivislible\ by\ 2\ or\ 3$$

$$then:$$

$$\left(P_{\{2,3,5,7\}}\right)^2 = \left[6 \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{p\in[(P\cup\{1\})\backslash\{2,3\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right]$$

$$\cup \left[6 \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{p\in[(P\cup\{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] - 1\right]$$

$$and\ then:$$

$$(P_{\{2,3,5,7\}})^1 \subset$$

$$\subset \left[6 \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{p\in[(P\cup\{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[6 \times \left[\bigcup_{p\in\{5,7\}} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[6 \times \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{p\in[(P\cup\{1\})\backslash\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\backslash P]} q\right] + 1\right] \cup$$

$$\cup \left[6 \times \left[\bigcup_{p \in \{5,7\}} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] + 1 \right] \cup$$

$$\cup \left[6 \times \left[\bigcup_{n \in N} 2^n \right] \times \left[\bigcup_{n \in N\{0\}} 3^n \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] - 1 \right] \cup$$

$$\cup \left[6 \times \left[\bigcup_{n \in N\{0\}} 2^n \right] \times \left[\bigcup_{n \in N} 3^n \right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p \right] \times \left[\bigcup_{q \in [Q \setminus P]} q \right] - 1 \right]$$

$\boldsymbol{We\ will\ check\ when\ the\ numbers}$:

$\boldsymbol{in\ the\ form}$

$(6a + 1)\ or\ (6a - 1)$

$\boldsymbol{has\ a\ form\ of\ their\ second\ power}$:

$(6a(6a + 2) + 1)\ or\ (6a(6a - 2) + 1)$

$\boldsymbol{otherwise}$:

$\boldsymbol{it\ must\ be\ a\ prime\ number}$

$\boldsymbol{for\ (6a + 1)}$:

$6a + 1 \neq 6n(6n + 2) + 1$

$6a \neq 6n(6n + 2)$

$a \neq n(6n + 2)$;

$a \neq 6n + 2$

$\boldsymbol{cause}$:

$for\ a \neq 6n + 2$;

$(6a + 1)\ is\ not\ a\ number\ (6a + 1)^2$

$\boldsymbol{then}$:

$for\ a \neq 6n + 2$:

$(6a + 1) -\ is\ a\ prime\ number$

$$\boldsymbol{for\ (6a-1)}$$

$$6a-1\neq 6n(6n-2)+1$$

$$6a\neq 6(6n^2-2n)+2$$

$$3a\neq 6(3n^2-n)+1$$

$$cause:$$

$$\forall a,n\ \in N: 3a\neq 6(3n^2-n)+1$$

$$then:$$

$$for\ any\ a$$

$$(6a-1)-is\ a\ prime\ number$$

Summarizing:

$$a-of\ Prime\ Numbers\ in\ form:$$

$$(6a+1)$$

$$a\neq 6m+2$$

$$when:\ a=6m$$

$$then:$$

$$a\in\left[\left[\bigcup_{n\in N}2^n\right]\times\left[\bigcup_{n\in N}3^n\right]\times\left[\bigcup_{p\in[(P\cup\{1\})\setminus\{2,3,5,7\}]}p\right]\times\left[\bigcup_{q\in[Q\setminus P]}q\right]\right]\cup$$

$$\cup\left[\left[\bigcup_{p\in\{5,7\}}p\right]\times\left[\bigcup_{q\in[Q\setminus P]}q\right]\right]$$

$$\boldsymbol{when}: \quad \boldsymbol{a = 6m - 2 = 2(3m - 1)}$$

$$\boldsymbol{cause}:$$

$$\forall \boldsymbol{m} \in \boldsymbol{N}: (\boldsymbol{3m - 1}) - \boldsymbol{is\ indivisible\ by\ 3}$$

$$\boldsymbol{and}$$

$$\boldsymbol{numbers} : (\boldsymbol{3m - 1})\ \boldsymbol{and}\ (\boldsymbol{3m + 1}) \rightarrow \boldsymbol{2^{2n+1}}\ \boldsymbol{and}\ \ \boldsymbol{2^{2n}}$$

$$\boldsymbol{then}:$$

$$\boldsymbol{a} \in \left[\left[\bigcup_{n \in N\{0\}} 2^{2n+1}\right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p\right] \times \left[\bigcup_{q \in [Q \setminus P]} q\right]\right] \cup$$

$$\cup \left[\left[\bigcup_{p \in \{5,7\}} p\right] \times \left[\bigcup_{q \in [Q \setminus P]} q\right]\right]$$

$$\boldsymbol{and}:$$

$$\boldsymbol{a - of\ Prime\ numbers\ in\ form}:$$

$$(\boldsymbol{6a - 1})$$

$$\boldsymbol{a} \in \left[\left[\bigcup_{n \in N} 2^n\right] \times \left[\bigcup_{n \in N\{0\}} 3^n\right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p\right] \times \left[\bigcup_{q \in [Q \setminus P]} q\right]\right] \cup$$

$$\cup \left[\left[\bigcup_{n \in N\{0\}} 2^n\right] \times \left[\bigcup_{n \in N} 3^n\right] \times \left[\bigcup_{p \in [(P \cup \{1\}) \setminus \{2,3,5,7\}]} p\right] \times \left[\bigcup_{q \in [Q \setminus P]} q\right]\right]$$

THEN:

$$P = \{2,3,5,7\} \cup \left[\{6\} \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\setminus\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\setminus P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6*5\} \times \left[\bigcup_{q\in[Q\setminus P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6*7\} \times \left[\bigcup_{q\in[Q\setminus P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N\{0\}\setminus\{1\}} 2^{2n+1}\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\setminus\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\setminus P]} q\right] + 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N} 2^n\right] \times \left[\bigcup_{n\in N\{0\}} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\setminus\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\setminus P]} q\right] - 1\right] \cup$$

$$\cup \left[\{6\} \times \left[\bigcup_{n\in N\{0\}} 2^n\right] \times \left[\bigcup_{n\in N} 3^n\right] \times \left[\bigcup_{p\in[(P \cup \{1\})\setminus\{2,3,5,7\}]} p\right] \times \left[\bigcup_{q\in[Q\setminus P]} q\right] - 1\right]$$

and then:

the theorem about Prime Numbres is proved

and:

the Theory of the origin of all natural numbers is correct