(I) Given be $n \in \mathbb{N}$ with $\boxed{n_i = (2x_i+1)y_i \quad , \; x_i, y_i \in \mathbb{N},}$ (eq. 1)

the set of the odd times tables n_i. (without 1)

With this, we can write:

$$\boxed{\overline{n}_i = (2x_i+1)y_i - \Delta_i \quad , \; \Delta_i \in \{1, \ldots, 2x_i\}} \quad \text{(eq. 2)}$$

$\Delta_i \in \mathbb{N}$

the set of all numbers, which <u>does not</u> belong to the times table n_i.

Now, we assume that we have two different $\overline{n}_i$ equations.

$$\left.\begin{array}{ll} \text{I.} \quad \overline{n}_1 = (2x_1+1)y_1 - \Delta_1 & , \; \Delta_1 \in \{1, \ldots, 2x_1\} \\ \text{II.} \quad \overline{n}_2 = (2x_2+1)y_2 - \Delta_2 & , \; \Delta_2 \in \{1, \ldots, 2x_2\} \end{array}\right\} \text{(eq. 3)}$$

with $x_2 > x_1$: $x_2 = x_1 + \Delta x_{1,2}$.

Let's do the intersection:

$$\overline{n}_1 = \overline{n}_2$$

$$(2x_1+1)y_1 - \Delta_1 = (2x_2+1)y_2 - \Delta_2$$

$$0 = (2x_2+1)y_2 - (2x_1+1)y_1 - \Delta_2 + \Delta_1$$

with $x_2 = x_1 + \Delta x_{1,2}$

$\Rightarrow$

$$0 = (2(x_1 + \Delta x_{1,2}) + 1)y_2 - (2x_1+1)y_1 - \Delta_2 + \Delta_1$$

$$0 = (2x_1+1)y_2 + 2\Delta x_{1,2} y_2 - (2x_1+1)y_1 - \Delta_2 + \Delta_1$$

$$0 = (2x_1+1)(y_2 - y_1) + 2\Delta x_{1,2} y_2 - \Delta_2 + \Delta_1$$

$\Rightarrow$

$$(2x_1+1)y_1 = (2x_1+1)y_2 + 2\Delta x_{1,2} y_2 - \Delta_2 + \Delta_1$$

$$y_1 = (2x_1+1)^{-1}\left((2x_1+1)y_2 + 2\Delta x_{1,2} y_2 - \Delta_2 + \Delta_1\right)$$

$$y_1 = y_2 + \frac{2\Delta x_{1,2} y_2 - \Delta_2 + \Delta_1}{2x_1+1}$$

Be $y_2 = x_1 \cdot (-\Delta_2 + \Delta_1) + (2x_1+1)z_{1,2}$ / $y_1 = x_2 \cdot (-\Delta_2 + \Delta_1) + (2x_2+1)z_{1,2}$

<u>Test:</u>

$$\frac{2\Delta x_{1,2} x_1 (-\Delta_2 + \Delta_1) + (-\Delta_2 + \Delta_1)}{2x_1+1} \quad \text{(eq. 4)}$$