

武田利一様

定数倍の規則性と例外についての「例外2」について調べました。

レポート 2018.6.2 「九九の表」 5/12 右に対応します。

$$\begin{aligned}
 M=17 \quad N=12 \quad l=2 \\
 N=12^2 \quad l=2 \\
 N=12^3 \quad l=12 \\
 N=12^4 \quad l=144 \\
 N=12^5 \quad l=1728
 \end{aligned}$$

$$\begin{aligned}
 2 \times 1 \\
 2 \times 6 \\
 2 \times 12 \\
 2 \times 12
 \end{aligned}$$

$$\begin{aligned}
 18 &= 17 + 1 = \\
 16 &= 17 - 1 =
 \end{aligned}$$

2が1つあまる。

$$\begin{aligned}
 & 2 \times 3 \times 3 \\
 & 2 \times 2 \times 2 \times 2
 \end{aligned}$$

12 12

$$\begin{aligned}
 M=99 \quad N=70 \quad l=2 \\
 N=70^2 \quad l=2
 \end{aligned}$$

$$\begin{aligned}
 100 &= 99 + 1 = \\
 98 &= 99 - 1 =
 \end{aligned}$$

$$\begin{aligned}
 & 10 \times 10 \\
 & 2 \times 7 \times 7
 \end{aligned}$$

70 70

$$\begin{aligned}
 M=577 \quad N=408 \quad l=2 \\
 N=408^2 \quad l=2
 \end{aligned}$$

$$\begin{aligned}
 578 &= 577 + 1 = \\
 576 &= 577 - 1 =
 \end{aligned}$$

$$\begin{aligned}
 & 2 \times 17 \times 17 \\
 & 3 \times 8 \times 3 \times 8
 \end{aligned}$$

408 408

$$\begin{aligned}
 17^2 - 1 &= 2 \times 12^2 \\
 99^2 - 1 &= 2 \times 70^2 \\
 577^2 - 1 &= 2 \times 408^2
 \end{aligned}$$

$\sqrt{2}$ の近似分数

$$\begin{aligned}
 M=17 \quad N=12 \\
 N=12^2
 \end{aligned}$$

$$\begin{aligned}
 0. \overset{\cdot}{i} \overset{\cdot}{7} \\
 0. \overset{\cdot}{0} \overset{\cdot}{2}
 \end{aligned}$$

$$2 \times 12 = 24 = 17 + 7$$

$$\begin{aligned}
 M=99 \quad N=70 \\
 N=70^2
 \end{aligned}$$

$$\begin{aligned}
 0. \overset{\cdot}{i} \overset{\cdot}{41} \\
 0. \overset{\cdot}{0} \overset{\cdot}{2}
 \end{aligned}$$

$$2 \times 70 = 140 = 99 + 41$$

$$\begin{aligned}
 M=577 \quad N=408 \\
 N=408^2
 \end{aligned}$$

$$\begin{aligned}
 0. \overset{\cdot}{i} \overset{\cdot}{239} \\
 0. \overset{\cdot}{0} \overset{\cdot}{2}
 \end{aligned}$$

$$2 \times 408 = 816 = 577 + 239$$

$$26^2 - 1 = 3 \times 15^2$$

$\sqrt{3}$ の近似分数

$$\begin{aligned}
 26 + 1 &= 27 = 3 \times 3 \times 3 \\
 26 - 1 &= 25 = 5 \times 5
 \end{aligned}$$

$$\begin{aligned}
 M=26 \quad N=15 \\
 N=15^2
 \end{aligned}$$

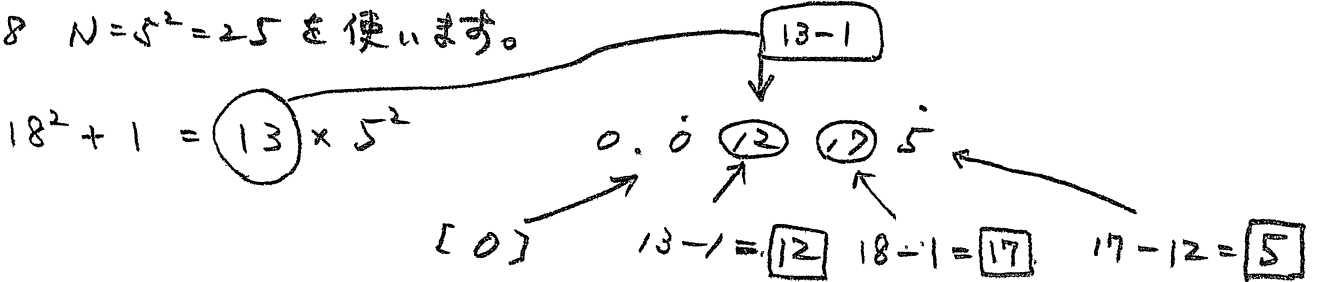
$$\begin{aligned}
 0. \overset{\cdot}{i} \overset{\cdot}{19} \\
 0. \overset{\cdot}{0} \overset{\cdot}{3}
 \end{aligned}$$

$$3 \times 15 = 45 = 26 + 19$$

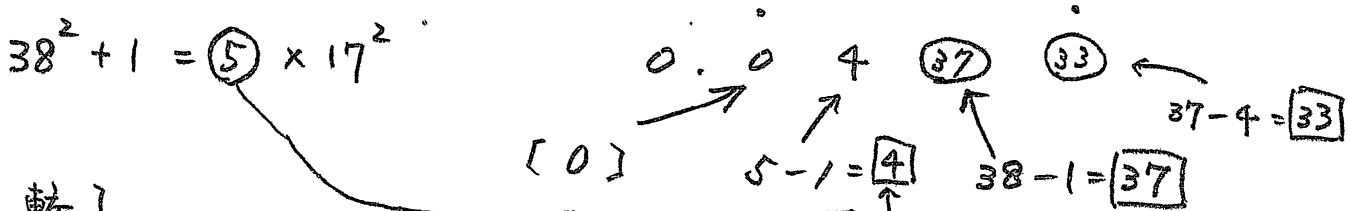
$M^2 + 1 = B \cdot N^2 \quad k=4 \quad \text{に適用}$

$M = 41$	$N = 29$ $N = 29^2 = 841$	$\begin{array}{r} 0. \overset{\cdot}{1} \text{ (16)} \text{ (39)} \text{ (24)} \\ 0. \overset{\cdot}{0} \text{ (40)} \text{ (39)} \end{array}$	$41^2 + 1 = 2 \times 29^2$
$M = 239$	$N = 169$ $N = 169^2 = 28561$	$\begin{array}{r} 0. \overset{\cdot}{1} \text{ (98)} \text{ (237)} \text{ (140)} \\ 0. \overset{\cdot}{0} \text{ (238)} \text{ (237)} \end{array}$	$239^2 + 1 = 2 \times 169^2$
$M = 7$	$N = 5$ $N = 5^2 = 25$	$\begin{array}{r} 0. \overset{\cdot}{1} \text{ 2 } \text{ 5 } \text{ 4} \\ 0. \overset{\cdot}{0} \text{ 1 } \text{ 6 } \text{ 5} \end{array}$	$7^2 + 1 = 2 \times 5^2$
$M = 18$	$N = 5$ $N = 5^2 = 25$	$\begin{array}{r} 0. \overset{\cdot}{3} \text{ (10)} \text{ (14)} \text{ 7} \\ 0. \overset{\cdot}{0} \text{ (12)} \text{ (19)} \text{ 5} \end{array}$	$18^2 + 1 = 13 \times 5^2$
$M = 38$	$N = 17$ $N = 17^2 = 289$	$\begin{array}{r} 0. \overset{\cdot}{2} \text{ 8 } \text{ (35)} \text{ (29)} \\ 0. \overset{\cdot}{0} \text{ 4 } \text{ (37)} \text{ (33)} \end{array}$	$38^2 + 1 = 5 \times 17^2$
$M = 682$	$N = 305$ $N = 305^2 = 93025$	$\begin{array}{r} 0. \overset{\cdot}{2} \text{ (160)} \text{ (679)} \text{ (521)} \\ 0. \overset{\cdot}{0} \text{ 4 } \text{ (681)} \text{ (677)} \end{array}$	$682^2 + 1 = 5 \times 305^2$

$M=18 \quad N=5^2=25$ を使います。



$M=38 \quad N=17^2=289$ を使います。



[比較]

$M = 649$

$N = 180$

$N = 180^2 = 32400$

$0. \overset{\cdot}{3} \text{ 393}$

$0. \overset{\cdot}{0} \text{ (13)}$

$18 \times 180 = 3240$

$= 649 \times 3 + 393$

$649^2 - 1 = 13 \times 180^2$