$z:\ x+y+z=1$

$$\left(\frac{1}{x^2}-1\right)\left(\frac{1}{y^2}-1\right)\left(\frac{1}{z^2}-1\right)\geq 512$$

$$\frac{(1-x)(1+x)}{x^2}$$

$$\frac{x+y+z}{x^2}=\frac{1}{x}+\frac{y}{x^2}+\frac{z}{x^2}$$

$$\frac{3}{\frac{x^2}{1-x^2}+\frac{y^2}{1-y^2}+\frac{z^2}{1-z^2}}\geq 8$$

$\underbrace{11\ldots1}_{n}\underbrace{22\ldots2}_{n+1}5=x^2 \quad x\in\mathbb{N}$

$a_{n+1}=a_n+r \quad r\in\mathbb{R}$

$r=a_{n+1}-a_n$

$a_n=a_k+(n-k)r$

$$S_n=\frac{a_1+a_n}{2}\cdot n=\frac{2a_1+(n-1)\cdot r}{2}\cdot n$$

$a_n-2r,\ a_n-r,\ a_n,\ a_n+r,\ a_n+2r$

$$a_n=\frac{a_{n-k}+a_{n+k}}{2}$$

CGEO. 5,0,0,0,

$a_{n+1}=a_n\cdot q$

$q=\frac{a_{n+1}}{a_n} \quad a_n\neq 0$

$a_n=a_k\cdot q^{n-k}$

$q^n-1=(q-1)(q^{n-1}+q^{n-2}+\ldots q^1+1) \,/\cdot a_1 \,/:(q-1)$ $\quad a_1\neq 0,\ q-1\neq 0$

$a^n-b^n=(a-b)(a^{n-1}+a^{n-2}b+\ldots+b)$

$a_1\cdot\frac{q^n-1}{q-1}=a_1+a_2+a_3+\ldots+a_n$

$$\boxed{S_n=\begin{cases}a_1\cdot\frac{1-q^n}{1-q} & q\neq 1\\ a_1\cdot n & q=1\end{cases}}$$

$a_{n-2},a_{n-1},a_n,a_{n+1},a_{n+2}$

$a_n^2=a_{n-k}\cdot a_{n+k}$

$3,9,27,\ldots \quad \begin{cases}a_1=3>0\\ q=3>1\end{cases} a_n\nearrow$

$\frac{1}{2};\frac{1}{4},\frac{1}{8},\frac{1}{16},\ldots \quad a_1=\frac{1}{2}>0,\ 0<q=\frac{1}{2}<1 \quad a_n\searrow$

$\frac{1}{4};5;100$

$1,-1,1,-1, \quad a_n=(-1)^{n+1} \begin{cases}a_1=1\\ q=-1\end{cases}$

$-37,2,-\frac{4}{37},\frac{8}{37^2} \quad \begin{cases}a_1=-37\\ q=-\frac{2}{37}\end{cases}$

$q=\frac{a_2}{a_1}$

$\frac{2}{3},-\frac{4}{9};\frac{8}{27}, \quad a_n=\frac{2}{3}\left(-\frac{2}{3}\right)^{n-1}=(-1)^{n-1}$

$q=-\frac{2}{3} \quad a_1=\frac{2}{3} \quad -\left(-\frac{2}{3}\right)^n$

$1024, \quad q=\frac{1}{2}$

$a_{20}=1024\left(\frac{1}{2}\right)^{19}=\frac{1}{512}$

$2\,|\ \overset{a_1}{1},\frac{1}{2};\frac{1}{4};\frac{1}{8}, + \quad a_1=1,\ q=\frac{1}{2}$

$S=1+\frac{1}{2}+\frac{1}{4}+\ldots \quad |q|<1 \quad a_1\cdot\frac{1-q^n}{1-q}=\frac{a_1}{1-q} \quad q^n\to 0$

$S=\frac{a_1}{1-q}$

$\underbrace{11111}_{n}\underbrace{2\ \ldots\ 2}_{n+1}\underbrace{5}_{1}=$

$n=2 \quad 112225$

$n=1 \quad 1225=35$

$\underbrace{1111\ldots\ldots1}_{2n+2}+$

$111 \quad 1+$

3

$111111+1111+3$

$1+10+10^2+10^3+\ldots+10^5$

$$\frac{-3\cdot 9}{-9}+\frac{1(1-10^4)}{1-10}+\frac{1\cdot(1-10^6)}{1-10}$$

$$\frac{10^6+10^4+25}{9}=\left(\frac{10^3+5}{3}\right)^2 \quad 3\,|\,1005$$

$\underbrace{111\ldots}_{2n+2}+\underbrace{\ldots}_{n+2}+\frac{3}{1}$

$\underbrace{1+10+10^2+\ldots+10^{2n+1}}_{2n+2}$

$$\frac{1-10^{2n+2}}{1-10}$$

$\underbrace{1111\ldots1}_{n}$

$$f(x)=x+\frac{3}{x}+\frac{9}{x^3}+\ldots=\frac{x}{1-\frac{3}{x^2}} \quad |q|<1$$

$$q=\frac{3}{x^2} \qquad =\frac{a_1}{1-q}$$

$$a_1+a_2+a_3+\ldots=\begin{cases}S=\frac{a_1}{1-q}\\ |q|<1\end{cases}$$

$q=-2$

Z: a, b, c, d c ar $abcd \in \mathbb{Z}$ $q = \frac{1}{2} r$

D: $abcd + (b-a)^4 = x^2$ $x \in \mathbb{Z}$ $p = \frac{b+c}{2}$

D. $a = p - 3q$
$b = p - q$
$c = p + q$
$d = p + 3q$

$c - b = 2q$

$L = (p^2 - 9q^2)(p^2 - q^2) + 16q^4 = p^4 - 10p^2q^2 + 25q^4 =$

$(p^2 - 5q^2)^2$

$p^2 - 5q^2 = \left(\frac{b+c}{2}\right)^2 - 5\left(\frac{c-b}{2}\right)^2 =$

$-c^2 - b^2 + 3bc \in \mathbb{Z}$

$1 + 2 + 3 \ldots + m = \frac{m \cdot (m+1)}{2}$ $\Sigma = 36100$

$2\ 4\ 6 \ldots 2m = 2 \cdot \frac{m(m+1)}{2}$

$m\ 2m\ 3m \ldots m^2 = m \cdot \frac{m(m+1)}{2}$

$\sqrt{49} = 7$

$\frac{m(m+1)}{2}\left(\frac{m \cdot (m+1)}{2}\right) = 190^2$

$m(m+1) = 190 \cdot 2$

$m(m+1) = 380 = 19 \cdot 20$

$\cancel{-19 \cdot (-20)}$

$19 \cdot 20$

$17 \cdot 70$, $35 \cdot 36$, $70 \cdot 18$, $140 \cdot 9$, $90 \cdot 4$, 360

36100

$10\sqrt{361} = 190$

$\sqrt{2\sqrt{3\sqrt{4\sqrt{5 \ldots \sqrt{(n-1)\sqrt{n}}}}}} < 3$ $\sqrt{2} < 3$

$2^{\frac{1}{2}} \cdot 3^{\frac{1}{4}} \cdot 4^{\frac{1}{8}} \cdot \ldots \cdot n^{\frac{1}{2^{n-1}}}$ $\frac{1}{m+1} \to 0$

$\sqrt[2^m]{(m+1)}$ $(m+1)^{\frac{1}{2^m}}$

$\sqrt[m]{m} \to 1$

$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \ldots \to \infty$ $1 \overset{TW}{\leftarrow} m^{\frac{1}{m} \to 0}_{\to \infty}$ ∞^0 ?

$1 + \frac{1}{2} + \frac{1}{4} + \ldots \to 2$