$$a_n = (2n-1)^2$$

$$\sum_{k=1}^{n} a_k$$

$$= \sum^{n} 4k^2 - \sum^{n} 4k + \sum^{n} 1$$

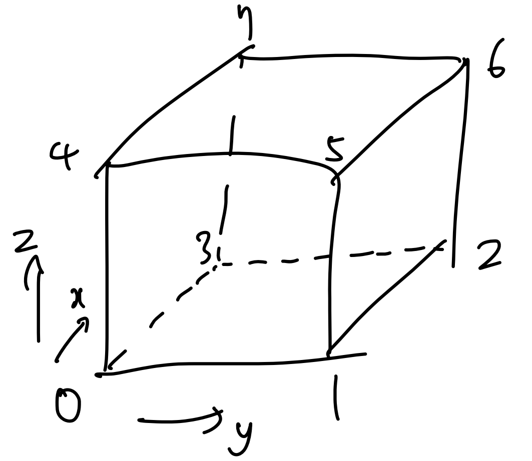
$$= \frac{2}{3} n(n+1)(2n+1) - 2n(n+1) + n$$

$$\left(\frac{4}{3}n + \frac{2}{3} - 2\right) n(n+1) + n$$

$$\frac{4}{3}n - \frac{4}{3}$$

$$\frac{4}{3} n(n^2-1) + n$$

$$= \frac{4}{3}n^3 - \frac{1}{3}n$$



$$a_n = \frac{1\cdot(2^n-1)}{2-1} = 2^n - 1$$

$$\sum_{k=1}^{n} a_k = \sum_{k=1}^{n} (2^k - 1)$$

$$= 2 + 2^2 + \cdots + 2^n - n$$

$$\frac{2(2^n-1)}{2-1} - n$$

$$2^{n+1} - 2 - n$$

$$\sum 2$$

1

11

111

$$3 \times \sum_{k=1}^{n} 10^{k-1} = a_n$$

$$\frac{10^n - 1}{3} = a_n$$

$$\sum^{8} a_k = \sum_{k=1}^{8} \frac{10^k - 1}{3}$$

$$a_k = k\cdot(n+1-k)$$

$$\frac{(n+1)n(n+1)}{2} - \frac{1}{6}n(n+1)(2n+1)$$

$$= \frac{n(n+1)}{6}(3n+3) - 2n - 1)$$

1 2 3 4 ⋯ n → 1〜n

1 2 ⋮ ⋮ n-1 1〜n-1

⋮ ⋮

1 2

1〜5
1〜4
1〜3
1〜2

$= \frac{n(n+1)(n+2)}{6}$

1 1

$a_k = \frac{k(k+1)}{2}$ $\sum_{i=1}^{k} i$

$\sum_{k=1}^{n} \frac{1}{2}k^2 + \frac{1}{2}k$

$\frac{n(n+1)(2n+1)}{12} + \frac{n(n+1)}{4}$

$\frac{n(n+1)(2n+4)}{12} = \frac{n(n+1)(n+2)}{6}$

1

1+2

1+2+3

1+2+3+4

⋮

$\sum_{i=1}^{n}\left(\sum_{k=1}^{i} k\right) = \sum_{i=1}^{n} \frac{i(i+1)}{2}$

$=$

$\sum_{k=1}^{n} \frac{k^2}{2} = \frac{n(n+1)(2n+1)}{6}$

$\sum_{k=1}^{5} 2k^2 + 2k + 8$

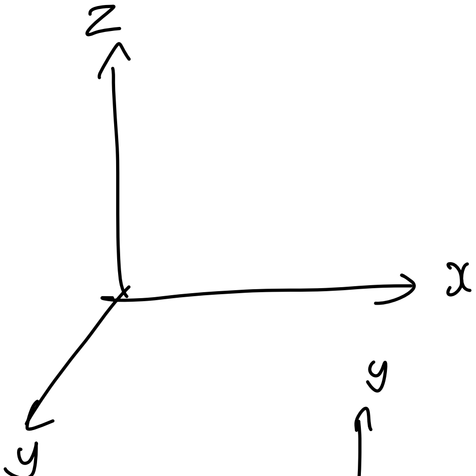
$= 110 + 30 + 40$

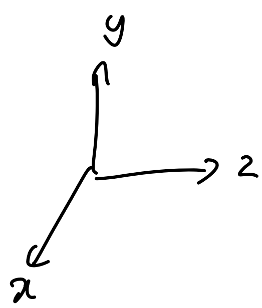
$= 180$

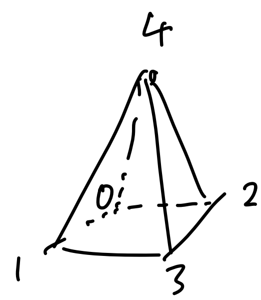
$a_{2k} \longrightarrow k^2 - 2k + 4$

$a_{2k-1} \longrightarrow (k+2)^2 = k^2 + 4k + 4$

$\sum_{k=1}^{5} a_{2k-1} + a_{2k} = \sum_{n=1}^{10} a_n$







$ab - a - b + 1 \to \underbrace{(a-1)}_{1}\underbrace{(b-1)}_{2} = \underbrace{2^n}_{2}$

$\downarrow 2 \quad 1$

$-1 \quad -2$

$\rightarrow 2 \quad -1$

$n+1 \begin{cases} 1 \\ 2 \\ \vdots \\ 2^n \end{cases} \qquad C_n = 2(n+1)$

$$8^{\frac{2n}{3}} = 2^{2n} = 4^n$$

$$\frac{1}{1\cdot 2} + \frac{1}{2\cdot 3} + \frac{1}{3\cdot 4} + \cdots + \frac{1}{9\cdot 10}$$

$$\frac{1}{n(n+1)} = \frac{1}{n} - \frac{1}{n+1}$$

$$\begin{array}{rl} & a \\ & a+3d \\ & a+6d \\ & \vdots \\ + & a+27d \\ \hline & 10a+135d \end{array}$$

$a_n = 3 \quad 4 \quad 5 \quad 6 \quad \cdots$

$b_n \longrightarrow$

$a_n = S_n - S_{n-1}$

$= 3n^2 + 2n$

$\quad - 3(n^2 - 2n + 1) - 2(n-1)$

$= 6n - 1 \quad (n \geq 2)$

$a_1 = S_1$

$a_1 - \cancel{a_2} + \cancel{a_2} - \cancel{a_3} + \cancel{\cdots} + \cancel{a_n} - a_{n+1}$

$a_1 - a_{n+1}$

$$\frac{1}{2}\left(\frac{1}{n} - \frac{1}{n+2}\right) = \frac{1}{2}\left(\frac{n+2-n}{n(n+2)} = \frac{2}{n(n+2)}\right)$$

$\downarrow$

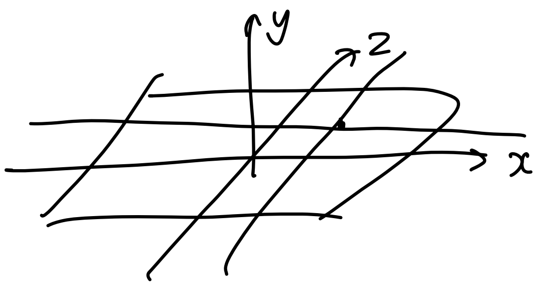
$$\frac{1}{n(n+2)}$$

$$\sum_{k=1}^{10} \frac{1}{S_k} - \frac{1}{S_{k+1}} = \frac{\overbrace{S_{k+1} - S_k}^{a_{k+1}}}{S_k S_{k+1}}$$

$S_n = \frac{3}{2}n(n+1)$ $\qquad \frac{n(n+1)}{2}$

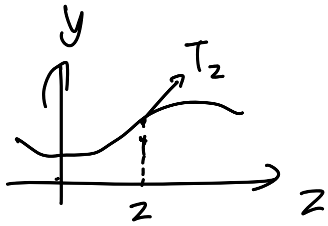
$a_n = 3n$

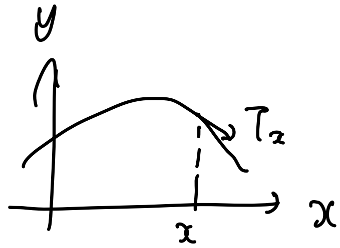
$C_n = a_n b_n$

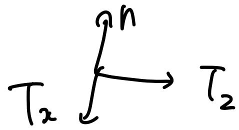


(x, z)에서 법선 벡터

$= n = T_z \times T_x$







$n = T_z \times T_x$

$T_z = \left(0, \frac{\partial y}{\partial z}, 1\right) \quad T_x = \left(1, \frac{\partial y}{\partial x}, 0\right)$

$$n = T_z \times T_x = \left(-\frac{\partial y}{\partial x},\ 1,\ -\frac{\partial y}{\partial z} \right)$$

$$y = 0.3(z \sin(0.1x) + x \cos(0.1z))$$

$$n = -0.3 \cdot 0.1 z \cdot \cos(0.1x) - 0.3\cos(0.1z),$$

$$1,$$

$$-0.3 \sin(0.1x) + 0.3x \cdot 0.1 \sin(0.1z)$$