$$\cancel{a_2} - a_1 = d$$

$$\cancel{a_3} - \cancel{a_2} = d$$

$$\cancel{a_4} - \cancel{a_3} = d$$

$$\vdots$$

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

$$a_n - a_1 = (n-1)d$$

$$a_n = a_1 + (n-1)d$$

$$a_1 \qquad x \qquad y \qquad a_n$$

$$x = a_1 + cd \qquad y = a_n - cd$$

$$x + y = a_1 \cancel{+cd} + a_n \cancel{-cd} = a_1 + a_n$$

$$a_1 \qquad x \qquad y \qquad a_n$$

$$x = a_1 q^k \qquad y = a_n q^{-k}$$

$$xy = a_1 \cancel{q^k} \cdot a_n \cancel{q^{-k}} = a_1 a_n$$

$$S_n = a_1 + \cancel{a_1 q} + \cancel{a_1 q^2} + \cancel{\dots} + \cancel{a_1 q^{n-1}}$$

$$q S_n = \cancel{a_1 q} + \cancel{a_1 q^2} + \cancel{a_1 q^3} + \cancel{\dots} + a_1 q^n$$

$$S_n - q S_n = a_1 - a_1 q^n$$

$$S_n (1 - q) = a_1 (1 - q^n)$$

$$S_n = a_1 \frac{1 - q^m}{1 - q}$$

$a_1 \quad a_2 \quad a_3 \quad a_4 \ldots a_5 \quad a_6 \quad a_7$

$7 \quad 10 \quad 13 \quad 16 \quad \underline{19} \quad 22 \quad 25 \ldots$

$a_5 = 19 \qquad d = 3$

$a_7 = 19 + (7-5)d$

$a_s = a_r + (s-r)d$

$s-r$

$a_s = a_r q$

$$a_n = \frac{2n-1}{n}$$

$$a_n < a_{n+1}$$

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

$$\frac{2n-1}{n} < \frac{2n+1}{n+1}$$

$$\cancel{2n^2} + \cancel{2n} - \cancel{n} - 1 < \cancel{2n^2} + \cancel{n}$$

$-1 < 0$ sempre vero

$2+4+6+\dots+2n=n(n+1)$

Base: $n=1$

$2=1(1+1) \qquad 2=2$

Supp. ✓ $n \Rightarrow n+1$

Hyp) $2+4+6+\dots+2n=n(n+1)$

th) $2+4+6+\dots+2n+(2n+2)=(n+1)(n+2)$

$\boxed{2+4+6+\dots+2n}+(2n+2)=n(n+1)+2n+2$

$=n^2+n+2n+2=n^2+3n+2=$

$=(n+1)(n+2)$