



$$\begin{array}{r}
 (n-1) \\
 \hline
 (n) + (n+1) \quad + \quad \dots \quad + \quad (2n-1) + (2n) \\
 \hline
 -n
 \end{array}$$

$$-(2n-1) + (2n)$$

$$1 \cdot 2n + 1 + 2n + 2$$

$$(\checkmark) (\checkmark) (\checkmark)$$

ind

assm $q \times d + r = Z$ after $n-1$ iterations

after n iterations, it is new

$$(q+1)d + (r-d) = \cancel{q}d + \cancel{d} + r - \cancel{d}$$

$qd + r$

$$\sum_{x \in S}$$

$$S_n = \{ \boxed{n}, n+1, \dots, 2n \}$$

$$S_{n+1} = \{ n+1, n+2, \dots, \boxed{2n+1}, 2n+2 \}$$

$\{1, 2\}$

base $n=1$

$$\underbrace{(-1)^1}_{-1} \cdot 1^2 + \underbrace{(-1)^2}_{+4} \cdot 2^2 = \frac{1(2+1)}{3}$$

inductive $\sim 2(n-1)$

ass,

$$\sum_{x=1}^{2(n-1)} (-1)^x x^2 = (n-1)(2(n-1)+1)$$

$1, 2, \dots, 2n-3, 2n-2, \underbrace{2n-1}_1, \underbrace{2n}_1$

$$\underbrace{(-1)^{2n-1}}_{-1} (2n-1)^2 + \underbrace{(-1)^{2n}}_{+4} (2n)^2 + \dots$$