

$\{1\}$, $\{2, 3, 4\}$, $\{5, 6, 7, 8, 9\}$, $\{10, \dots, 17\}$ $(n)^2 \rightarrow 17 \rightarrow 17^2 = 289$ $17^2 = 4C + 1 = 289$ $\frac{17 + 40}{2} = 28.5$	۱
$\{k \rightarrow 2k\}$, $\{3k+1, \dots, 4k+3\}$, $\{4k+4, \dots, 2vk+12\}$ $\{2vk+12, \dots, 11k+39\}$, $\{11k+40, \dots, 25k+120\}$ $k=1$ $\frac{121 + 2523}{2} = 1322$	۲
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$a_n = an^2 + bn + c \rightarrow \frac{1}{a}n^2 + \frac{b}{a}n - \frac{c}{a}$ $a = \frac{1}{10}, 1 - 12 \rightarrow -\frac{1}{10}$ $a_0 = 12, a_1 = 14, 2$ $a_{15} = -\frac{1}{10}(15)^2 + 4 \cdot 15 - 1 = 14$ $a_1 = -\frac{1}{10} + 4 - 1 = 2.9$ $-a + ab + c = 14 \rightarrow \begin{cases} ab + c = 14 \\ -\frac{1}{10} + 15b + c = 14.2 \end{cases}$	۴
$a_1 + rd, a_1 + vd, a_1 + vd - a_1 - rd = \frac{vd - rd}{1} = vd$ $a_n = 0.1nd_n + n, a_{15} = 1.5d + 15$ $a_{15} = \frac{1}{10}d + 15 - 1.5d = 14 \rightarrow \frac{1}{10}d = 15 - 14 = 1 \rightarrow d = 10$	۵

$$a_r = m \rightarrow q_m^r = \delta(m+d)(m-d) + r_m(m-d)$$

$$r_m^r - r_d m - \delta d^r = 0 \rightarrow m = rd \pm \sqrt{rd^r + \delta d^r} = \epsilon d^r \rightarrow \frac{1}{\epsilon} d$$

$$a_\epsilon = a_r + rd \rightarrow \frac{1}{\epsilon} d + rd = \epsilon d \rightarrow \epsilon d = \frac{1}{\epsilon} d + rd \rightarrow d + rd = d \rightarrow \frac{d}{d} = 1$$

$$c, b, a$$

$$b = c + d = -\frac{1}{\mu} d$$

$$a = c + rd \rightarrow \frac{1}{\mu} d$$

$$q = -1 \rightarrow r q = -r$$

$$q \rightarrow \frac{1}{\epsilon}, a, b$$

$$-\frac{1}{\mu} d, \frac{1}{\mu} d, -\frac{1}{\mu} d$$

$$\frac{c}{\epsilon}, \frac{c+rd}{r}, c+d \rightarrow (c+d) \left(\frac{r}{\epsilon} \right)$$

$$c^r + dc = c + \epsilon d^r + \epsilon cd \rightarrow c = -\frac{1}{\mu} d$$

$$a, b, c$$

$$\frac{b}{q}, b, bq$$

$$\frac{aq}{aq} = \frac{q}{(-\frac{1}{\epsilon})} = -\frac{1}{\mu} \frac{b}{q}, r b q, r b \rightarrow r b q - \frac{b}{q}$$

$$q = r b \pm \sqrt{a b^r + 14 b^r} = r b$$

$$\epsilon b q^r - b = r b q$$

$$\epsilon b q^r - r b q - b = 0$$

$$\epsilon b q^r - \frac{b}{q} = r b$$

$$\frac{a, q}{(q, q)^r} + \frac{a, q}{(a,)^r} = r \quad \frac{q^r}{a, r} + \frac{a, q}{a, r} = r$$

$$\frac{a, r}{a, r} = 1$$

$$\frac{a, r}{-r a, r} = -\frac{1}{r}$$

$$a, q + q^r = r a, r$$

$$a, q + q^r - r a, r = 0$$

$$-a, \pm \sqrt{a, r^2 + a a, r}$$

$$-r a, -a_r = r a, r \rightarrow a_1 \rightarrow a_r = a, r$$

$$a_\delta = r v$$

$$a_r^r = a_\epsilon \rightarrow a^r q = \frac{r v}{q} \rightarrow \left(\frac{r v}{q} \right)^r = \frac{r v}{q} \rightarrow r v q^r = r v$$

$$a_r = \frac{r v}{q^r}$$

$$a_1 = \frac{a_\delta}{a_\epsilon} = \frac{r v}{a_1} = \frac{1}{\mu}$$

$$r v = q^r$$

$$a_2 = \mu \quad \frac{1}{\mu} - \frac{1}{\mu} = \frac{1}{\mu}$$

$a_0, a_3, a_4, a_9 \rightarrow$ ضابطی اول (2^k)

$a_1, a_5, a_7 \rightarrow$ ضابطی دوم $(-2k+5)$

$a_2, a_6, a_8 \rightarrow$ ضابطی سوم $\left[\frac{n}{k+2}\right] + a$

$a_0 = 2^0$ $a_0 = 1$	$a_3 = 2^1$ $a_3 = 2$	$a_4 = 2^2$ $a_4 = 4$	$a_9 = 2^3$ $a_9 = 8$
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$a_1 = -2(0) + 5$ $a_1 = 5$	$a_5 = -2(1) + 5$ $a_5 = 3$	$a_7 = -2(2) + 5$ $a_7 = 1$
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$a_2 = \left[\frac{2}{2}\right] + a$ $a_2 = a + 1$
$a_6 = \left[\frac{6}{2}\right] + a$ $a_6 = a + 1$
$a_8 = \left[\frac{8}{2}\right] + a$ $a_8 = a + 2$

$$S_{10} = 1 + 5 + a_2 + 2 + 2 + a_6 + 4 + 1 + a_8 + 8 = 19$$

$$a_2 + a_6 + a_8 = -2 \rightarrow 3a + 4 = -2 \rightarrow \boxed{a = -2}$$

مجموع صحبات $a_2 + a_6 + \dots$ از ضابطی سوم بدست می آید

$$a_n = \left[\frac{2k+2}{k+2}\right] + (-2)$$

$$a_n = \left[\frac{2k+4 + k-2}{k+2}\right] - 2 = \left[2 + \frac{k-2}{k+2}\right] - 2 = \boxed{\left[\frac{k+2}{k-2}\right]}$$

عبارت $\left[\frac{k+2}{k-2}\right]$ به ازای $k=0$ و $k=1$ برابر ۱- است و به ازای سایر صحبات k برابر ۰ است پس داریم:

$$S = a_2 + a_6 + a_8 + \dots + a_{24}$$

$$S = (-1) + (-1) + 0 + \dots + 0 = \boxed{-2}$$

سوال ۳