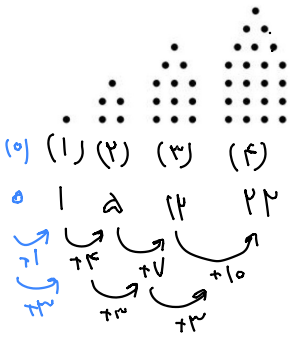


(1)



$$t_n = an^r + bn + c$$

$$c = 0 \quad ra = 3 \rightarrow a = \frac{3}{r} \rightarrow b = -\frac{1}{r}$$

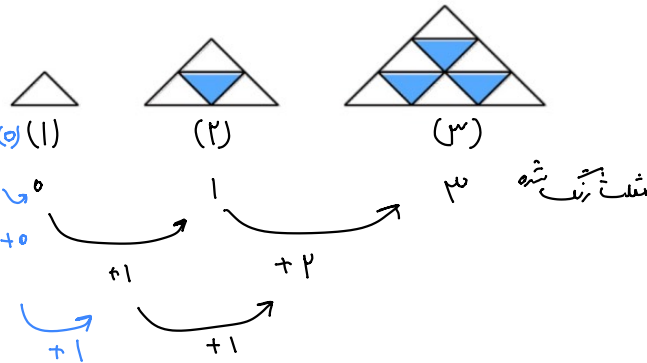
$$t_n = an^r + bn \rightarrow t_1 = \frac{3}{r}(1)^r + b = 1$$

$$b = 1 - \frac{3}{r} = -\frac{1}{r}$$

$$t_n = \frac{3}{r}n^r - \frac{1}{r}n$$

$$n = 10 \rightarrow t_{10} = \frac{3}{r}(10)^r - \frac{1}{r}(10) =$$

$$= \frac{3}{r} \times 1000 - \frac{1}{r}(10) = 1000 - 2 = 998$$



$$t_n = an^r + bn + c$$

$$ra = 1 \rightarrow a = \frac{1}{r}$$

$$c = 0 \quad b = -\frac{1}{r}$$

$$\frac{3}{r} + b = 1$$

$$t_n = \frac{1}{r}n^r - \frac{1}{r}n$$

$$t_1 = \frac{1}{r}(1)^r + b = 0$$

$$b = -\frac{1}{r}$$

$$t_n = \frac{1}{r}n^r - \frac{1}{r}n = 55$$

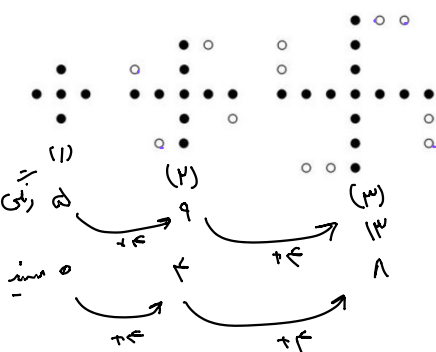
$$\frac{1}{r}(n^r - n) = 55$$

$$n^r - n = 55 \times r = 110$$

$$n(n-1) = 110$$

$$n = 11$$

(2)



$$t_n = an + b \rightarrow t_n = rn + b \rightarrow b = 1 \rightarrow t_n = rn + 1$$

$$t_{11} = 4(11) + 1 = 45$$

$$t_n = an + b \rightarrow t_n = rn + b \rightarrow b = -4 \rightarrow t_n = rn - 4$$

$$t_{11} = 4(11) - 4 = 40$$

$$جمع کل = 40 + 45 = 85$$

(3)

$$\rightarrow \frac{(-1)^n}{n} \rightarrow a_1 = \frac{(-1)^1}{1} = -1$$

$$a_2 = \frac{(-1)^2}{2} = \frac{1}{2} \quad a_3 = \frac{-1}{3}$$

$$a_n = \frac{(-1)^n}{n} \text{ بزرگترین و کوچکترین جمله‌ی دنباله‌ی } a_n \text{ چقدر اختلاف دارند؟}$$

$$\max - \min$$

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

(4)

$$b_n = (-3)^n - 7n \rightarrow b_3 = (-3)^3 - 7(3) = -27 - 21 = -48$$

$$a_n = -5n + 22 = -48 \rightarrow -5n = -48 - 22 \rightarrow -5n = -70 \rightarrow n = 14 = k$$

$$a_{10} - a_2 = 12 \quad d = \frac{a_{10} - a_2}{10 - 2} = \frac{12}{8} = \frac{3}{2}$$

$$a_4 - a_1 = ? \quad \rightarrow \frac{a_4 - a_1}{4 - 1} \rightarrow r = a_4 - a_1$$

$$d = \frac{t_n - t_m}{n - m}$$

(5)

$a_r = v$ $a_r = 12$ $a_l = b_l$ $a_r = b_r$ (1)

$\begin{cases} ra + b = v \\ ra + b = 12 \end{cases}$ $\begin{cases} -ra - b = -v \\ ra + b = 12 \end{cases}$ $\begin{cases} ra = 1 \\ a = r \end{cases}$ $an = rn + b$ $a_1 = r(1) - 1 = r = b_1$

$b_1 = r$ $b_n = an + b$ $\begin{cases} b_1 = a + b = r \\ b_r = ra + b = 11 \end{cases}$ $\begin{cases} -a - b = -r \\ ra + b = 11 \end{cases}$ $a = 1$ $b_n = 1n + b \rightarrow b = -2$

$b_r = 11$ $b_1 = 1(1) - 2 = -1$ $b_n = 1n - 2$

$t_n = \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \dots$ $t_n = \frac{r_n - 1}{r_n + 1} < \frac{1}{r} \rightarrow 1n - 1 < 4n + 9$ (1)

$t_1 = \frac{1}{2} \rightarrow b = 2$ $r_n < 1r$ $n < \frac{1r}{r} \rightarrow 4, 2 \rightarrow 1 \leq n \leq 4 \rightarrow 4$

$t_n = \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \dots$ $ra = -r \rightarrow a = -\frac{r}{r}$ (9)

$t_n = An^r + Bn$ $C = 0$ $b = \frac{12}{r}$

$3A + 5B$ $t_1 = -\frac{r}{r}(1) + b = 4 \rightarrow b = \frac{12}{r}$ $A = -\frac{r}{r}$ $B = \frac{12}{r}$

$3(-\frac{r}{r}) + 5(\frac{12}{r}) \rightarrow -\frac{3r}{r} + \frac{60}{r} = \frac{57}{r} = \frac{57}{r}$

$t_n = -1, -2, -3, \dots$ $ra = r \rightarrow a = 1$ $C = -4$ (10)

$b = -1$ $t_1 = 1x(1)^r + b - 4 = -4 \rightarrow b = -1$

$t_n = n^r - n - 4$

$ra + r1 = r1 \rightarrow a = 2$ $an + b \rightarrow \begin{cases} ra + b = r1 \\ ra + b = r1 \end{cases} \rightarrow \begin{cases} -a - b = -r1 \\ ra + b = r1 \end{cases} \rightarrow \begin{cases} -a - b = -r1 \\ -b = -r1 \end{cases} \rightarrow \begin{cases} -a - b = -r1 \\ b = r1 \end{cases}$

$t_n = 2n + r1$

$n^r - n - 4 = 2n + r1$

$n^r - 4n = r1$

$1(n - 4) = r1$ $n = 4$

$(4)^r - 4 - 4 = 2(4) + r1$

$44 = 44$