

$$\begin{array}{c}
 1 \quad 5 \quad 12 \quad 22 \\
 (1) \quad (2) \quad (3) \quad (4) \rightarrow 2a = 3 \rightarrow a = 1, 5, 12, 22 = an^2 + bn + c \\
 \begin{array}{c} \nearrow \quad \nearrow \\ \varepsilon \quad \varepsilon \end{array}
 \end{array}$$

$$\begin{aligned}
 a_1 &= 1 \times 1^2 + b + c = 1 \rightarrow b + c = 0 \quad \text{یا} \quad -b - c = 0 \quad \text{یا} \quad -b - c = 0 \quad \text{یا} \quad -b - c = 0 \\
 a_2 &= 1 \times 2^2 + 2b + c = 5 \rightarrow 2b + c = 3 \quad \text{یا} \quad 2b + c = 3
 \end{aligned}$$

$$\begin{aligned}
 &\rightarrow \begin{cases} -b - c = 0 \\ 2b + c = 3 \end{cases} \rightarrow \begin{aligned} &-b - c = 0 \quad \text{یا} \quad b = -c \\ &2b + c = 3 \end{aligned} \rightarrow \begin{aligned} &2(-c) + c = 3 \\ &-2c + c = 3 \end{aligned} \rightarrow \begin{aligned} &-c = 3 \\ &c = -3 \end{aligned} \rightarrow \begin{aligned} &b = -(-3) = 3 \\ &c = -3 \end{aligned}
 \end{aligned}$$

$$a_{10} = 1 \times 10^2 + (3 \times 10) + (-3) = 100 + 30 - 3 = 127$$

$$\begin{array}{c}
 0 \quad 1 \quad 3 \\
 (1) \quad (2) \quad (3) \rightarrow 2a = 1 \rightarrow a = 0.5 \\
 \begin{array}{c} \nearrow \quad \nearrow \\ 1 \quad 1 \end{array}
 \end{array}$$

$$\begin{aligned}
 a_1 &= 0 \rightarrow 0 \times 1^2 + b + c = 0 \rightarrow 0 + b + c = 0 \rightarrow b + c = 0 \quad \text{یا} \quad b = -c \\
 a_2 &= 1 \rightarrow 0 \times 2^2 + 2b + c = 1 \rightarrow 2b + c = 1 \quad \text{یا} \quad 2b + c = 1
 \end{aligned}$$

$$\begin{aligned}
 &\rightarrow \begin{cases} b + c = 0 \\ 2b + c = 1 \end{cases} \rightarrow \begin{aligned} &b + c = 0 \quad \text{یا} \quad b = -c \\ &2b + c = 1 \end{aligned} \rightarrow \begin{aligned} &2(-c) + c = 1 \\ &-2c + c = 1 \end{aligned} \rightarrow \begin{aligned} &-c = 1 \\ &c = -1 \end{aligned} \rightarrow \begin{aligned} &b = -(-1) = 1 \\ &c = -1 \end{aligned}
 \end{aligned}$$

$$0.5n^2 - 0.5n + 0 = 0.5n \rightarrow n = 1$$

$$\begin{array}{c}
 5 \quad 13 \quad 21 \\
 (1) \quad (2) \quad (3) \rightarrow 2a = 1 \rightarrow a = 0.5 \\
 \begin{array}{c} \nearrow \quad \nearrow \\ \varepsilon \quad \varepsilon \end{array}
 \end{array}$$

$$\begin{aligned}
 a_1 &= 5 \rightarrow 0.5 \times 1^2 + b + c = 5 \rightarrow 0.5 + b + c = 5 \rightarrow b + c = 4.5 \quad \text{یا} \quad b + c = 4.5 \\
 a_2 &= 13 \rightarrow 0.5 \times 2^2 + 2b + c = 13 \rightarrow 2 + 2b + c = 13 \rightarrow 2b + c = 11 \quad \text{یا} \quad 2b + c = 11
 \end{aligned}$$

$$\begin{aligned}
 &\rightarrow \begin{cases} b + c = 4.5 \\ 2b + c = 11 \end{cases} \rightarrow \begin{aligned} &b + c = 4.5 \quad \text{یا} \quad b = 4.5 - c \\ &2b + c = 11 \end{aligned} \rightarrow \begin{aligned} &2(4.5 - c) + c = 11 \\ &9 - 2c + c = 11 \end{aligned} \rightarrow \begin{aligned} &-c = 2 \\ &c = -2 \end{aligned} \rightarrow \begin{aligned} &b = 4.5 - (-2) = 6.5 \\ &c = -2 \end{aligned}
 \end{aligned}$$

$$\begin{array}{c}
 5 \quad 9 \quad 13 \\
 (1) \quad (2) \quad (3) \rightarrow 2a = 1 \rightarrow a = 0.5 \\
 \begin{array}{c} \nearrow \quad \nearrow \\ \varepsilon \quad \varepsilon \end{array}
 \end{array}$$

$$\begin{aligned}
 a_1 &= 5 \rightarrow 0.5 \times 1^2 + b + c = 5 \rightarrow 0.5 + b + c = 5 \rightarrow b + c = 4.5 \quad \text{یا} \quad b + c = 4.5 \\
 a_2 &= 9 \rightarrow 0.5 \times 2^2 + 2b + c = 9 \rightarrow 2 + 2b + c = 9 \rightarrow 2b + c = 7 \quad \text{یا} \quad 2b + c = 7
 \end{aligned}$$

$$\begin{aligned}
 &\rightarrow \begin{cases} b + c = 4.5 \\ 2b + c = 7 \end{cases} \rightarrow \begin{aligned} &b + c = 4.5 \quad \text{یا} \quad b = 4.5 - c \\ &2b + c = 7 \end{aligned} \rightarrow \begin{aligned} &2(4.5 - c) + c = 7 \\ &9 - 2c + c = 7 \end{aligned} \rightarrow \begin{aligned} &-c = -2 \\ &c = 2 \end{aligned} \rightarrow \begin{aligned} &b = 4.5 - 2 = 2.5 \\ &c = 2 \end{aligned}
 \end{aligned}$$

$$a_n = \frac{(-1)^n}{n} \quad \left\{ \begin{array}{l} \text{جمله } k = a_1 = \frac{(-1)^1}{1} = -1 \\ \text{جمله } b = a_2 = \frac{(-1)^2}{2} = \frac{1}{2} \end{array} \right\} \quad \frac{1}{2} - (-1) = \frac{1}{2} + 1 = \frac{3}{2} = 1.5$$

$$b_n = (-3)^n - vn \rightarrow b_2 = (-3)^2 - v \times 2 = 9 - 2v = -1$$

$$\begin{aligned}
 a_n &= -an + 22 \rightarrow -ak + 22 = -1 \rightarrow 22 - ak = -1 \rightarrow 22 + 1 = ak \\
 &\rightarrow 23 = ak \rightarrow k = 23
 \end{aligned}$$

$$t_{10} - t_v = 1P \rightarrow t_v + r_d - t_v = 1P \rightarrow r_d = 1P \rightarrow d = \mathcal{E}$$

$$t_4 - t_1 = ? \rightarrow \cancel{t_1} \text{ ad } t_1 = ? \rightarrow \omega \times \varepsilon = \boxed{10^{10} \text{ s}}$$

$\mathcal{E}_r = V, \mathcal{E}_\varepsilon = 1a \rightarrow \mathcal{E}_r + r_d = 1a \rightarrow V + r_d = 1a \rightarrow d = \varepsilon$
 $(1) \xrightarrow{\varepsilon} (r) \xrightarrow{\varepsilon} (r) \xrightarrow{\varepsilon} (1a)$

$$\begin{array}{c} p \\ (1) \end{array} \xrightarrow{\text{Griff. Map.}} \begin{array}{c} 11 \\ (p) \end{array} \xrightarrow{\quad} \Lambda^{n-2}$$

$$t_n = \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9}, \frac{1}{10}, \frac{1}{11}, \frac{1}{12}, \frac{1}{13}, \frac{1}{14}, \frac{1}{15}, \frac{1}{16}, \frac{1}{17}, \frac{1}{18}, \frac{1}{19}, \frac{1}{20}, \dots$$

$t_n = 4, 9, 9, 4, 0, \dots$
 $t_n = A n^r + B n$
 $\begin{matrix} \nearrow & \nearrow & \nearrow & \nearrow \\ +r & 0 & -r & -4 \\ \nwarrow & \nwarrow & \nwarrow & \nwarrow \\ -r & -r & -r & \end{matrix} \rightarrow \left\{ \begin{matrix} r = -1 \\ a = -1/a \end{matrix} \right\}$

$$q_1 = q \rightarrow -1/a \times 1^r + B = q \rightarrow B = \overline{1/a}$$

$$\mu_A + \omega B = \mu_X(-\cancel{\omega}) + \omega \cancel{\mu_X} = \mu_{Y,\omega} - \epsilon, \omega = \boxed{\mu_Y}$$

$$z_n = -\frac{q}{r} - \varepsilon, 0, \dots \quad z_n = a n^r + b n + c \quad \left. \begin{array}{l} q = |x|^r + b + c = -q \\ q = |x|^r + r b + c = -\varepsilon \end{array} \right\} \rightarrow \begin{array}{l} b = -1 \\ c = -q \end{array}$$

$$\epsilon_r = 4, \epsilon_g = \epsilon_l \rightarrow 4 + 2d = \epsilon_l \rightarrow d = 1$$

14, 11, 14, 11, 14, ... (49), 11

$$\rightarrow 1x n^r + (-b) + (c)$$

$$\begin{array}{cc} \downarrow & \downarrow \\ -1 & -4 \end{array}$$

$n = 9$