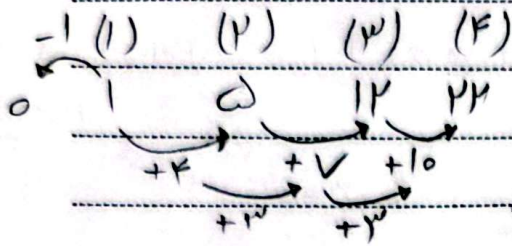


(1)

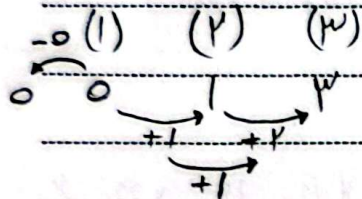


$$2a = 3 \rightarrow a = \frac{3}{2}$$

$$C = 0, 1 = a + b + C = \frac{3}{2} + b \Rightarrow b = -\frac{1}{2}$$

$$t_n = \frac{3}{2}n^2 - \frac{1}{2}n \rightarrow t_{10} = \frac{3}{2} \times 100 - \frac{1}{2} \times 10 = 145$$

(2)

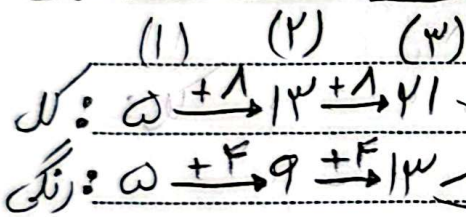


$$2a = 1 \rightarrow a = \frac{1}{2}, C = 0$$

$$1 = a + b + C = \frac{1}{2} + b \rightarrow b = -\frac{1}{2} \rightarrow t_n = \frac{1}{2}n^2 - \frac{1}{2}n$$

$$22 = \frac{1}{2}n^2 - \frac{1}{2}n = \frac{n}{2}(n-1) \rightarrow 11 = n(n-1) \rightarrow n = 11$$

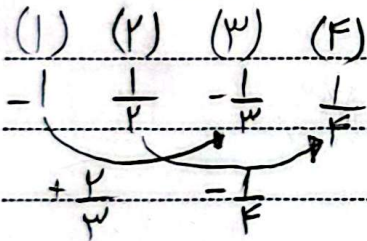
(3)



$$t_n = 1n - 3 \rightarrow t_{11} = 1 \times 11 - 3 = 8$$

$$t_n = 4n + 1 \rightarrow t_{11} = 4 \times 11 + 1 = 45$$

(4)



$$\text{بزرگترین جابه} = \frac{1}{2}$$

$$\text{کوچکترین جابه} = -1$$

$$\left| \frac{1}{2} - 1 \right| = \frac{1}{2}$$

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

(5)

$$b_p = a_k = -2V - 2I = -4A \rightarrow -4A = -\omega k + 2 \Rightarrow -V_0 = -\omega k$$

$$k = 14$$

(6)

$$12 = |a_{10} - a_4| = |10a + b - 4a - b| = |6a| \Rightarrow 2 = |a|$$

$$a_n = a \cdot n + b$$

$$|a_4 - a_1| = |4a + b - a - b| = |3a| = 3 \times 2 = 6$$

(7)

$$10 - V = \Delta = a_f - a_r = Fa + b - Va - b \Rightarrow \Delta = Va \rightarrow a = \frac{\Delta}{V}, V = Va + b \rightarrow b = -\Delta$$

$$a_n = Fn - 1 \rightarrow a_f = b_f = \boxed{1}, a_r = b_r = \boxed{11} \quad b_n = b \cdot n + C$$

$$b = b_r - b_f = 11 - 1 = 10, 1 = 10 \times 1 + C \Rightarrow C = -9 \quad b_n = 10n - 9$$

3, 11, 19, 27, ...

(8)

$$t_n = \frac{Fn - 1}{n + 1} \rightarrow \frac{Fn - 1}{n + 1} = \frac{1}{2} \rightarrow 2n - 1 = n + 1 \rightarrow n = 2$$

$$n < 2 \rightarrow \text{جواب} = \text{جمله}$$

(9)

(1) (2) (3) (4) $VA = -1 \rightarrow A = -\frac{1}{V} \rightarrow 0$

$C = 0 / 4 = A + B + C \rightarrow 4 = -\frac{1}{V} + B \rightarrow B = \frac{10}{V}$

$VA + 10B = 1(-\frac{1}{V}) + 10 \times \frac{10}{V} = \frac{100 - 1}{V} = \boxed{99}$

(10)

(1) (2) (3) $VA = 1 \rightarrow A = 1, C = -4 \quad -4 = A + B + C \Rightarrow$

$-4 = 1 + B - 4 \rightarrow B = -1$

$t_n = An^2 + Bn + C \rightarrow t_n = 1n^2 - n - 4$

$$a_f - a_r = Fa + b - Va - b \rightarrow F1 - 1 = Va \rightarrow a = 0 \quad V1 = Va + b \Rightarrow V \times 0 + b = 1 \rightarrow b = 1$$

$$a_n = 0n + 1$$

$$t_n = a_n \rightarrow n^2 - n - 4 = 0n + 1 \Rightarrow n^2 - n - 5 = 0$$

$$(n - 5)(n + 1) = 0 \rightarrow n = 5 \checkmark \quad n = -1 \times$$