

$$1, 2, 12, 22$$

$$1^2 + \frac{1 \times 0}{2}, 2^2 + \frac{2 \times 1}{2}, 3^2 + \frac{3 \times 2}{2}, 4^2 + \frac{4 \times 3}{2}$$

$$a_n = n^2 + \frac{n(n-1)}{2} \Rightarrow a_{10} = 100 + 45 = 145$$

(۲)

$$0, 1, 3$$

$$a_n = \frac{n(n-1)}{2} = 11 \Rightarrow n(n-1) = 22 \Rightarrow n = 11$$

(۲)

$$مجموعه اول = 1 + 5n \rightarrow a_{11} = 56$$

$$مجموعه دوم = 5n - 4 \rightarrow a_{11} = 51$$

$$مجموعه کل = 51 + 56 = 107$$

(۲)

$$\left. \begin{array}{l} a_{\min} = a_1 = \frac{-1}{1} = -1 \\ a_{\max} = a_2 = \frac{1}{2} \end{array} \right\} \frac{1}{2} - (-1) = \frac{3}{2}$$

(۲)

$$b_3 = -27 - 21 = -48$$

$$-2n + 22 = -48 \Rightarrow 2n = 70 \Rightarrow n = 35$$

(۲)

$$a_{10} - a_1 = 2d = 12 \Rightarrow d = 6$$

$$a_9 - a_1 = 2d \Rightarrow 2d = 20 \Rightarrow d = 10$$

(10)

$$a_8 - a_1 = 2d = 12 \Rightarrow d = 6 \Rightarrow a_8 = 11 \Rightarrow a_1 = 5$$

$$b_8 = 11 \quad b_1 = 5$$

$$d_b = 12 \Rightarrow a = -12 \Rightarrow b_n = \dots \quad 12n - 12$$

(12)

$$t_n = \frac{8n-1}{2n+1} < \frac{1}{2}$$

$$12n - 12 < 9n + 9$$

$$3n < 21 \Rightarrow n < 7$$

$$n \leq 6$$

(6)

$$t_n = 9, 9, 9, 9, 0, \dots$$

$$12A = -12 \Rightarrow A = -1 \Rightarrow B = \sqrt{\frac{1}{2}} \Rightarrow 12A + 12B = -9 + \frac{12}{2} = \frac{9}{2}$$

(9)

$$t_n = -9, -9, 0, \dots$$

$$r_a = r$$

$$a = 1$$

$$d = \frac{81-21}{2} = 30 \Rightarrow a_1 = 21$$

$$a_n = 30n + 21$$

$$t_n = n^2 - n - 9$$

$$n^2 - n - 9 = 30n + 21$$

$$n^2 - 31n - 30 = 0 \Rightarrow (n-32)(n+1) = 0$$

$$\Rightarrow n = 32$$