

$$t_n = 5, 9, 13, 17, \dots$$

$$a) \quad 9 - 5 = 4 = d \Rightarrow t_n = 4n + 1$$

$$b) \quad t_{10} = \frac{4(10) + 1}{1} = 41$$

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$$t_n = 4, 10, 16, 22, \dots \Rightarrow d = 6 \Rightarrow t_n = 6n + 2 \Rightarrow t_{10} = 6(10) + 2 = 62$$

$$a) \quad S_{10} = \frac{10}{2} (4 + 62) = 5(66) = 330$$

$$b) \quad \text{مجموعه } \rightarrow A(6) = 32 \Rightarrow t_{r1}, t_{r2}, t_{r3}, t_{r4} \Rightarrow t_{r1} = 6(1) + 2 = 8, t_{r2} = 6(2) + 2 = 14$$

$$S_4 = \frac{4}{2} (8 + 14) = 2(22) = 44$$

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$$a_n = 1 + \sqrt{r}, r, r - \sqrt{r}, \dots$$

$$d = r - (1 + \sqrt{r}) = r - 1 - \sqrt{r} = 1 - \sqrt{r} / a_2 - a_1 = r - \sqrt{r} - r + 1 - \sqrt{r}$$

$$t_{r1} - t_{r2} = \frac{a_1 + r d - (a_1 + r d)}{-a_1 - r d} = r d = r(1 - \sqrt{r}) = r - r\sqrt{r}$$

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$$a_n = 5^{r^n}, r \times 5^{r^n}, 5^y \Rightarrow d = \frac{r^n \times 5^{r^n} - 5^{r^n}}{r^n - 1} = 5^{r^n} \times \frac{r^n - 1}{r^n - 1} = 5^{r^n} \times r \Rightarrow d = ar - ar = 5^y - r \times 5^{r^n} = 5^{r^n} (5^{y-r^n} - r) = 5^{r^n} \times r$$

$$5^{y-r^n} - r = r \Rightarrow 5^{y-r^n} = 2r \Rightarrow y - r^n = 1 \Rightarrow y = r^n + 1$$

$$b_n = x, r, y \Rightarrow d = ar - a_1 = r - x \quad \{ d = ar - ar = y - r \Rightarrow r - x = y - r \Rightarrow y - r = 1 \Rightarrow y = r + 1$$

$$r - x = r^n + 1 - r \Rightarrow r^n = r \Rightarrow \boxed{x = 1}, \boxed{y = r}$$

$$xy = 1 \times r = r$$

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$$a_n = r^n - 4, r^n - 1, 4r^n, \dots; a_6 = ?$$

$$d = ar - a_1 = r^n - 1 - (r^n - 4) = r^n - 1 - r^n + 4 = 3$$

$$4r^n - r^n + 1 = 3 \Rightarrow 3r^n = 2 \Rightarrow r^n = \frac{2}{3}$$

$$a_n = r^n - 4 \Rightarrow a_6 = \frac{r(6)}{1} - 4 = 4$$

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$$a_n = r, \omega, v, \dots \Rightarrow d = r \Rightarrow a_n = r_{n+1} \quad , \quad b_n = r, \omega, \lambda, \dots \Rightarrow d = r \Rightarrow b_n = r_{n+1}$$

$$\text{فرض: } \omega, 11, 1v, \dots \Rightarrow \{ \text{مجموعه } = 4n-1 \} \quad a_{r_0} = r(r_0) + 1 = 11 \quad , \quad b_{r_0} = r(r_0) - 1 = 9$$

$$4n-1 \leq 11 \Rightarrow 4n \leq 12 \Rightarrow n \leq 3 \Rightarrow \text{فرض } n=3 \Rightarrow \text{نفسه } 11, 1v, \dots$$

$$a_1 + a_r + a_r = r_1 \Rightarrow a_r - d + a_r + a_r + d = r_1 \Rightarrow 3a_r = r_1 \Rightarrow a_r = v$$

$$a_1 + a_r + a_\omega = r_\omega \Rightarrow a_r - d + a_r + a_r + d = r_\omega \Rightarrow 3a_r = r_\omega \Rightarrow a_r = r_\omega$$

$$\left. \begin{array}{l} (a_1 + d = v) - \\ - a - d = -v \\ a_1 + r d = r_\omega \\ d = r_\omega, a_1 = -r_1 \end{array} \right\}$$

$$\frac{a_r - a_r + a_1}{a_1} = \frac{(r_\omega - v) - r_1}{-r_1} = \frac{v}{-r_1} = \frac{-1}{r_1}$$

$$a_1 + a_r + a_r = r_1 \Rightarrow a_r - d + a_r + a_r + d = r_1 \Rightarrow 3a_r = r_1 \Rightarrow a_r = \omega$$

$$a_r + a_\omega = r_\omega \Rightarrow a_r + d + a_r + r d = r_\omega \Rightarrow \frac{r a_r}{r(\omega)} + \omega d = r_\omega \Rightarrow 1 + \omega d = r_\omega \Rightarrow \omega d = r_\omega - 1 \Rightarrow d = r_\omega - 1 \Rightarrow d = r$$

$$a_1 + d = \omega \Rightarrow a_1 = r \Rightarrow a_n = r + (n-1)r = r_n \Rightarrow r_n - 1 = a_n$$

$$a_{10} = \frac{r(10) - 1}{r} = \frac{r9}{r}$$

$$S_9 = 9 S_r \quad , \quad \frac{a_r}{a_v} = ?$$

$$S_r = a_1 + a_r + a_r = a_r - d + a_r + a_r + d = 3a_r$$

$$S_9 = a_1 + a_r + \dots + a_9 = a_\omega - d + a_\omega - r d + \dots + a_\omega + d = 9a_\omega$$

$$S_9 = 9 S_r \Rightarrow 9a_\omega = 9(3a_r) \Rightarrow \frac{9a_\omega}{9} = \frac{9 \cdot 3a_r}{9} \Rightarrow a_\omega = 3a_r$$

$$\hookrightarrow a_r + r d$$

$$a_r + r d = 3a_r \Rightarrow 3a_r = r d \Rightarrow d = \frac{3a_r}{r}$$

$$\frac{a_r}{a_v} = \frac{a_r + r d}{a_r + \omega d} = \frac{a_r + r \left(\frac{3}{r} a_r \right)}{a_r + \omega \left(\frac{3}{r} a_r \right)} = \frac{a_r + 3a_r}{a_r + \frac{3}{r} a_r} = \frac{4a_r}{a_r + \frac{3}{r} a_r} = \frac{4}{1 + \frac{3}{r}} = \frac{4r}{r+3} = \frac{4r}{r+3}$$

$$a_1 = 11$$

$$a_v = r_\omega \Rightarrow a_1 + d = r_\omega \Rightarrow r d = r_\omega - 1 \Rightarrow d = r$$

$$\left. \begin{array}{l} \Rightarrow a_n = r_{n+1} \\ a_r = \frac{r(r)}{r} + v = r_r \end{array} \right\}$$

$$b_1 = r_\lambda \quad , \quad b_1 = r_\lambda, b_r = r_r \Rightarrow b_r - b_1 = -1 \Rightarrow b_1 + r d' - b_1 = -1 \Rightarrow r d' = -1 \Rightarrow d' = -\frac{1}{r}$$

$$b_x = r_r \Rightarrow -a: \frac{b_n - b_1}{n-1} = \frac{r_r - r_\lambda}{n-1} = -\frac{1}{n-1} \Rightarrow \frac{-r_\omega}{n-1} = -\frac{1}{n-1} \Rightarrow n-1 = 1 \Rightarrow n = 2 \Rightarrow b_2 = r_r$$

$$b_r = a_r = r_r$$

$$b_1, \dots, b_4 \text{ } r_r, r_\lambda, r_r, 11 \Rightarrow \text{مجموعه } 11, 1v, \dots$$