

$$a_1 = 40 \quad d = \frac{41 - 40}{4 - 1} = 1$$

$$a_4 = 41$$

$$a_n = 4n + 3$$

$$4n + 3 = 50$$

$$4n = 47$$

$$n = 12$$

$$d = 1$$

$$\text{اولی} = 101$$

$$\text{آخری} = 997$$

$$\text{تعداد} = \frac{\text{اولی} - \text{آخری}}{\text{فاصله}} + 1$$

$$\frac{997 - 101}{1} + 1 = \frac{896}{1} + 1 = 897$$

$$a_{n+1} + a_{n+2} + a_{n+3} = -4n + 12$$

$$a_1 = 4 \Rightarrow d = -2$$

$$a_n = -2n + 4$$

$$a_1 \rightarrow -2 + 4 = 2$$

$$a_{14} \rightarrow -28 + 4 = -24$$

$$a_1 + a_{14} = -22$$

$$a_1 - a_3 = a_{13} - a_1$$

$$2^{x+1} - 2^{x+1} = 2^{2x} - 2^x - 2^{x+1} \rightarrow 2^x = 2^x - 2^x - 2^{x+1}$$

$$2^{2x} - 2^x - 2^{x+1} = 0$$

$$2^x - 2^x - 2 = 0$$

$$a = \frac{2 \pm \sqrt{4}}{2} = 1, 0$$

$$a_3 = 2$$

$$a_{13} = 12$$

$$a_1 = 1$$

$$t_{12} - t_{10} = 0$$

$$t_{12} + t_{10} = 20$$

$$2t_{12} = 20 \quad t_{12} = 10$$

$$t_{10} = 10$$

$$d = 10$$

$$a_n = 10n - 10 \quad 10 \times 11 - 10 = 110$$

$$\begin{aligned} S_{ar} &\rightarrow \omega a + \omega d \rightarrow 1 & 1\omega a + r\omega d &= \omega a + r\omega d \rightarrow 1\omega a = \omega d \\ S_{br} &\rightarrow \omega a + r\omega d \rightarrow r & a_1 &= \frac{1}{r}d \\ & & d &= r a_1 \\ & & a_r &= r\omega + 1 \\ & & \frac{a_r}{a_1} &= r \end{aligned}$$

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$$\begin{aligned} t_q^r - t_\omega^r &\rightarrow (t_q - t_\omega)(t_q + t_\omega) = (t_v + r d - (t_v - r d))(t_v + r d + t_v - r d) \\ r d \times r + v &\rightarrow t_v - r d + 1\omega \\ r d = 1\omega & d = \omega \\ \frac{r + v \times r\omega}{r + v} &= \boxed{\frac{r\omega}{r + v}} \end{aligned}$$

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$$\begin{aligned} d &= \frac{a_m - a_n}{m - n} \quad \text{و} \quad d = \frac{b - a}{n + 1} \\ \frac{r + \sqrt{r} - r + 1\sqrt{r}}{1\sqrt{r} + 1} &= \frac{1\sqrt{r}}{1\sqrt{r}} = \sqrt{r} \end{aligned}$$

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$$d = \frac{b - a}{n + 1} = \frac{r r - r}{r n - r} = \frac{r\omega}{r n - r} \rightarrow \frac{1\omega}{r n - 1}$$

$$a_n = 11$$

$$11 = r + n d \rightarrow r + \frac{1\omega n}{r n - 1} = 11$$

$$9 = \frac{1\omega n}{r n - 1} \Rightarrow \boxed{n = r}$$

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$$r + a_1 v = a_n + a_{n+r}$$

$$\begin{aligned} r_{n+r} &= r_0 \\ n &= 1 \end{aligned}$$

$$\frac{a_1}{a_r} = r$$

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

$$r a_r = a_r + r d$$

$$r a_r = r d$$

$$a_r = r d$$

$$a_1 + r d = r d$$

$$a_1 = -d$$

$$r = a_1 + d \rightarrow -d + d = 0$$

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