

$$t_1 = f_c$$

$$t_2 = t_1 + d = 91 \rightarrow d = 21 \rightarrow d = 7 \rightarrow t_n = 7n + 22$$

$$7 \cdot 1 = 7n + 22 \rightarrow 17d = 7n$$

$$n = 17 \checkmark$$

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$$1.1, 1.1, \dots, 99V$$

$$\frac{99V \cdot 1.1}{V} + 1 = 129 \checkmark$$

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$$a_{1V} = (2 \times 1V) + 2 = 4$$

$$a_{1A} = (-2 \times 1) + 2 = 0$$

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$$a_{1V} + a_{1A} = -2 - 1 = -3$$

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$$t_n = a_n + d \rightarrow a_n + d + a_n + 2d + a_n + 3d = -9n + 17$$

$$3a_n + 6d = -9n + 17 \rightarrow a_n = -3n + \frac{17}{3}$$

$$d = 1 \rightarrow t_n = -3n + 17$$

$$t_5 = 1^5 - 1 = a_1 + 4d$$

$$t_7 = 7^2 - 1 = a_1 + 6d$$

$$t_{12} = 12^3 - 1 = a_1 + 11d$$

$$t_5 + t_7 + t_{12} = 1^5 - 1 + 7^2 - 1 + 12^3 - 1 = 1 + 49 + 1728 - 3 = 1835$$

$$\rightarrow 1(12+1) = 13$$

$$1^x - 1 + 1^m - 1 = 1^x + 1 \rightarrow 1^x + 1^m - 1 = 1^x + 1$$

$$\rightarrow 1^x + 1^m - 1 = 1^x + 1 \rightarrow 1^m = 2 \rightarrow m = 2 \checkmark$$

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$$a_{12} - a_1 = (a_1 + 11d) - (a_1 + d) = 10d = \omega \rightarrow d = \frac{\omega}{10} \checkmark$$

$$a_{12} + a_1 = (a_1 + 11d) + (a_1 + d) = 2a_1 + 12d = 1\omega$$

$$2a_1 = 1\omega - 12d = 1\omega - \frac{12\omega}{10} = -\frac{2\omega}{10}$$

$$a_{12} = a_1 + 11d = -\frac{\omega}{10} + \frac{11\omega}{10} = \omega \checkmark$$

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$$\begin{aligned}
 s_1 &= \omega \times \frac{a_1 + a_2}{r} = \omega(a_1 + rd) \\
 s_r &= \omega \times \frac{a_r + a_{r+1}}{r} = \omega(a_1 + rd)
 \end{aligned}
 \left. \vphantom{\begin{aligned} s_1 \\ s_r \end{aligned}} \right\} \begin{aligned}
 s_1 &= \frac{1}{r} s_r \Rightarrow \omega(a_1 + rd) = \frac{\omega}{r} (a_1 + rd) \\
 a_1 + rd &= \frac{1}{r} (a_1 + rd) \Rightarrow ra_1 + rd = a_1 + rd \\
 \Rightarrow ra_1 &= a_1 \rightarrow a_r = a_1 + d = ra_1 \rightarrow \text{برابر} \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \omega \cdot t_1 &= t_1 + rd \rightarrow rd = \omega \\
 \omega \cdot t_r &= \omega - 1 \Rightarrow n = r \\
 t_1 + rd &= \omega + r\omega = r\omega \rightarrow \frac{1}{r\omega} \cdot r\omega = 1 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 t_1 &= r - 1\sqrt{r} \\
 t_r &= r + \sqrt{r}
 \end{aligned}
 \left. \vphantom{\begin{aligned} t_1 \\ t_r \end{aligned}} \right\} \begin{aligned}
 t_1 + rd &= r + \sqrt{r} \rightarrow 1\sqrt{r} = 1\sqrt{r} \\
 d &= \sqrt{r} \checkmark
 \end{aligned}$$

$$\begin{aligned}
 t_1 &= r \\
 t_n &= r
 \end{aligned}$$

$$d = \frac{b-a}{(fn-1)} = \frac{r-1}{fn-1} = \frac{r}{fn-1}$$

$$(r, 1) = r \quad d = r \checkmark$$

$$\begin{aligned}
 a_n + a_{n+1} &= a_r + a_{r+1} \\
 (a + (n-1)d) + (a + nd) &= (a + rd) + (a + (r+1)d) \\
 2a + (2n-1)d &= 2a + (2r+1)d \\
 (2n-1)d &= (2r+1)d \Rightarrow 2n-1 = 2r+1 \Rightarrow n = r+1
 \end{aligned}$$

$$\begin{aligned}
 a_n &= ra_r \rightarrow a_1 + rd = r(a_1 + rd) \rightarrow a = -d \\
 a_m &= 0 \rightarrow a_1 + (m-1)d = md - rd = 0 \rightarrow m = r
 \end{aligned}$$

$$n=1 \rightarrow a_r + a_r + a_r = 4 \rightarrow a_d - a_r = -4$$

$$n=2 \rightarrow a_r + a_r + a_d = 0$$

$$a_{1+} + 4d - a_{1-} = -4 \rightarrow 4d = -4 \rightarrow d = -1$$

$$a_r + a_r + a_r = 4a_{1+} + 4d = 4 \rightarrow a_{1+} = 1$$

$$a_{10} + a_{11} = 4a_{1+} + 4d = 12 - 4 = \boxed{-8}$$

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