

$$3d = a_4 - a_1 = 71 - 14 = 57 \Rightarrow d = 19 \Rightarrow a_n = 19n + 34$$

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$$19 \cdot n = 19n + 34 = 199 \Rightarrow n = 129$$

1. (1.1), 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.1, ...

$d = 1$

$$a_n = 19n + 34$$

$$19n + 34 \leq 999$$

$$\Rightarrow 19n \leq 965$$

$$\Rightarrow n \leq 50.789$$

$$\Rightarrow n = 50$$

$$a_{n+1} + a_{n-1} + a_{n-2} = -4n + 12 \Rightarrow a_1 + a_2 + a_3 = 12 \Rightarrow a_1 + a_2 = 12 - a_3 = 12 - 1 = 11$$

$$a_2 + a_3 + a_4 = 12 \Rightarrow a_2 + a_3 = 12 - a_4 = 12 - 4 = 8$$

$$a_{19} + a_1 = 19a_1 + 19d = 12 - 34 = -22$$

$$\Rightarrow a_n = -2n + 1$$

$$a_{19} = 19a_1 + 19d = 12 - 34 = -22$$

$$a_n = -2n + 1$$

$$a_{19} = -2 \cdot 19 + 1 = -37$$

$$a_{19} = 19a_1 + 19d = 12 - 34 = -22$$

$$\Rightarrow a_{19} + a_1 + a_{19} = 19a_1 + 19d = 12 - 34 = -22$$

$$a_{19} - a_1 = 18d = 18 \Rightarrow d = 1$$

$$d_{19} + d_{19} = 18 = 18a_1 + 18d \Rightarrow 18a_1 = 0 \Rightarrow a_1 = 0$$

$$\Rightarrow a_1 = -\frac{18}{18} = -1$$

$$a_{19} = a_1 + 18d = -1 + 18 = 17$$

$$\omega\left(\frac{a_1 + a_n}{2}\right) = \omega(a_1 + r_d) = \frac{1}{n} \times \omega\left(\frac{a_1 + a_n}{2}\right) = \frac{1}{n} \times \omega(a_1 + r_d)$$

$$\Rightarrow \omega\left(\frac{a_1 + a_n}{2}\right) = \omega\left(\frac{a_1 + r_d}{2}\right) \Rightarrow a_1 + r_d = \frac{1}{n} (a_1 + r_d) \Rightarrow r_d = a_1 + r_d$$

$$\Rightarrow r_d = d \Rightarrow \left(\frac{a_1 + a_n}{2} - \frac{a_1 + r_d}{2} = \frac{r_d - a_1}{2} = \mu \right)$$

$$t_n = t_{n-1} + 1 \Rightarrow r_d = 1 \Rightarrow d = \omega$$

$$t_{n-1} = t_{n-2} + 1 \Rightarrow r_d = 1 \Rightarrow d = \omega$$

$$(t_n - t_{n-1}) (t_{n-1} - t_{n-2}) \Rightarrow (r_d + 1) (r_d + 1) = (r_d + 1) (r_d + 1)$$

$$\Rightarrow \frac{t_n - t_{n-1}}{t_{n-1} - t_{n-2}} = \frac{r_d + 1}{r_d + 1} = 1$$

$$t_1 = r_d + 1 \sqrt{\mu}$$

$$t_{1+r} = r_d + 1 \sqrt{\mu} = t_1 + r_d = r_d + 1 \sqrt{\mu} + 1 \sqrt{\mu} \Rightarrow 1 \sqrt{\mu} = 1 \sqrt{\mu} \Rightarrow d = \sqrt{\mu}$$

$$t_1 = r_d \quad t_{n+1} = 1 \quad t_{n-r} = r_d$$

$$d = \frac{t_{n-r} - t_1}{r_d - r_d + 1} = \frac{r_d - r_d}{1} = 0$$

$$\Rightarrow \frac{r_d - r_d}{1} = 0 \Rightarrow r_d - r_d = 0 \Rightarrow 1 = 1 \Rightarrow r_d = r_d$$

$$a_n + a_{n+r} = a_1 + a_{1+r} \Rightarrow n + n + r = 1 \Rightarrow n = 1$$

$$a_1 + r_d a_n \Rightarrow a_1 + r_d a_f \Rightarrow r_d = r_d = r_d + r_d \Rightarrow r_d = -r_d \Rightarrow a_1 = -d$$

$$\Rightarrow a_n = a_1 + (n-1)(-a_1) \quad a_1 + (n-1)(-a_1) = 0 \Rightarrow n-1 = 1 \Rightarrow n = 2$$