

$$t_n = 6, 9, 12, 15, \dots$$

$\underbrace{\quad}_{4} \quad \underbrace{\quad}_{4} \quad \underbrace{\quad}_{4}$

$$t_n = 4n - 1 \quad (\text{الف})$$

$$t_{10} = 4 \cdot 10 - 1 = 39$$

(ب)

$$t_n = 7, 10, 13, 16, \dots$$

$$t_n = 3n + 4 \quad t_{10} = 34$$

$$t_{49} = 117 + 4 = 121 \quad t_{49} = 121 + 4 = 125$$

$$a(7 + 34) = 121$$

(الف)

$$\frac{4}{2} (117 + 121) = 494$$

(ب)

$$1 + \sqrt{3}, 2, 3 - \sqrt{3}, \dots$$

$\underbrace{\quad}_{1 + \sqrt{3}} \quad \underbrace{\quad}_{1 + \sqrt{3}} \quad d = 1 - \sqrt{3}$

$$t_n = 1 + \sqrt{3} + (n-1)(1 - \sqrt{3}) \Rightarrow t_{40} - t_{23} = 2d = 2 - 2\sqrt{3}$$

$$a_n = 2 \cdot 5^n, 3 \times 2 \cdot 5^n, 5 \cdot 5^n$$

$$b_n = 2, 3, 5$$

$$a_1 = 2 \times 5^1 = 10, a_2 = 3 \times 2 \times 5^2 = 150, a_3 = 5 \times 5^3 = 625$$

$$\Rightarrow a_1 = 10, a_2 = 150, a_3 = 625$$

$$r = \frac{a_2}{a_1} = \frac{150}{10} = 15, r = \frac{a_3}{a_2} = \frac{625}{150} = \frac{125}{30} = \frac{25}{6}$$

$$\Rightarrow a_1 \times r = 10 \times 15 = 150$$

$$a_n = 2a_{n-1}, 2a_{n-1}, 2a_{n-1}$$

$\underbrace{\quad}_{2} \quad \underbrace{\quad}_{2} \quad \underbrace{\quad}_{2}$

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

$$a_n = -3 + (n-1)3 = 3n-6 \Rightarrow a_5 = 12-6 = 6$$

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$a_1 = \omega, a_2 = \omega, \dots$
 $b_1 = \omega, b_2 = \omega, \dots$
 $a_n = \omega_{n+1}$
 $a_p = \omega_1$

$\omega, 11, 15, 23, \dots$
 $(n = 1, 2, \dots)$

$y_{n-1} \leq \omega_1 \Rightarrow y_n \leq \omega_2 \Rightarrow n \leq \omega \rightarrow \omega \leq \omega$

$a_1 + a_p + a_q = \omega_1 = \omega_a + \omega_d \Rightarrow \omega_d = \omega_1 \Rightarrow d = \omega_1 = \omega_a + \omega_1 = \omega_1$
 $a_1 + a_p + a_q = \omega_a + \omega_d = 1 \cdot \omega \Rightarrow \omega_a = -\omega_1 \Rightarrow a_1 = -\omega_1$

$\frac{a_p - a_q + a_1}{a_1} = \frac{a_1 + \omega_d - a_1 - d + a_1}{-\omega_1} = \frac{-\omega_1}{-\omega_1} = 1$

$a_1 + a_p + a_q = \omega = \omega_a + \omega_d = 1 \cdot \omega$
 $a_p + a_q = \omega \Rightarrow \omega_a + \omega_d = \omega$
 $a_n = \omega + (n-1)\omega = \omega_n = 1 \Rightarrow a_1 = \omega$

$\omega_a + \omega_d = 1 \cdot \omega$
 $\omega_a + \omega_d = \omega \Rightarrow \omega_d = \omega - \omega_a = \omega - \omega = 0$
 $\Rightarrow \omega_a = \omega \Rightarrow a_1 = \omega$

$\frac{a_1}{\omega} (a_1 + a_q) = \frac{a_1}{\omega} (a_1 + a_p) \Rightarrow \frac{a_1}{\omega} a_1 + \frac{a_1}{\omega} a_q = \frac{a_1}{\omega} a_1 + \frac{a_1}{\omega} a_p$
 $\Rightarrow \frac{a_1}{\omega} a_q = \frac{a_1}{\omega} a_p \Rightarrow a_q = a_p$
 $\frac{1}{\omega} a_1 + \frac{1}{\omega} a_q = \frac{1}{\omega} a_1 + \frac{1}{\omega} a_p \Rightarrow \frac{1}{\omega} a_q = \frac{1}{\omega} a_p \Rightarrow a_q = a_p$

$a_1 = 11$
 $a_p = \omega$
 $b_1 = \omega$
 $b_p = a_p = \omega$
 $b_{n+1} = 1 \cdot \omega$

$d = \frac{\omega - 11}{\omega} = 1 \Rightarrow a_p = 11 + 1 \cdot \omega = \omega$
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