

$$a_1 = x_0$$

11, Δ

صحيح

11

$$a_1 = x_1 = x_0 + r \cdot d \Rightarrow r \cdot d = x_1$$

(2)

$$a_n = x_0 + (n-1)r = x_0 + (n-1)d = x_0 + (n-1)x_1 = x_0 + nx_1 - x_1 = nx_1 \Rightarrow nx_1 = 1 \Rightarrow n = \frac{1}{x_1}$$

$$\Rightarrow n = 1 \checkmark$$

$$a_n = nx_1 + r$$

(2) 12

$$\Rightarrow 100 < a_n < 999$$

$$100 < nx_1 + r < 999 \Rightarrow 99 < nx_1 < 999$$

$$\Rightarrow 1 \leq n \leq 9$$

$$\Rightarrow 1 \leq n \leq 9 \Rightarrow n = 1, 2, \dots, 9 \checkmark$$

نوع وجود دارد

$$a_1 + a_2 + a_3 = -1 + 12 = 11$$

13

$$a_1 + a_2 + a_3 = 0$$

$$3a_2 = 0$$

$$a_2 = 0$$

$$\Rightarrow d = -1$$

$$a_1 + a_2 + a_3 = 11$$

$$3a_1 = 11$$

$$a_1 = \frac{11}{3}$$

$$a_n = a_1 + (n-1)d = \frac{11}{3} + (n-1)(-1) \Rightarrow a_1 = \frac{11}{3}$$

$$a_1 + a_n = 2a_1 + (n-1)d = -\frac{11}{3} \checkmark$$

$$r^x = 1, r^{x+1}, r^{x+2}, \dots$$

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(1, Δ)

$$a_1 \rightarrow a_n \rightarrow a_{12} \Rightarrow \frac{a_1 + a_{12}}{2} = a_n \checkmark$$

$$\frac{r^x + r^{x+1}}{2} = r^{x+1} \Rightarrow r^x + r^{x+1} = 2r^{x+1} \Rightarrow r^x = r^{x+1} \Rightarrow r = 1$$

$$\cancel{(x+1)(x-1) = x+1 \Rightarrow (x-1)(x+1) = x+1}$$

$$\cancel{x^2 - 1 = x+1 \Rightarrow x^2 = x+2}$$

$$\cancel{x^2 - x = 2 \Rightarrow x(x-1) = 2}$$

$$\Rightarrow x=2$$

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

فالتو $2^x(2^x + 1)$

$$(2^x)^2 - 2 = 2^x \times 2$$

$$(2^x - 2)(2^x + 2) = 2^x \times 2$$

جواب : 3, 8, 13 $\rightarrow$ 24

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

$$a_{11} + a_{12} = 20 \Rightarrow 2a_{11} = 20$$

سوال گفته a_{12} رواز a_{11} کم
مستقیم!

$$a_{11} = 10 \Rightarrow a_{12} = 10 = a_{10} + 10$$

$$\Rightarrow d = 10, a_1 = -12.5$$

$$a_{11} = a_1 + 10d = 10 - 125 = -115$$

$$a_1 + a_2 + a_3 + a_4 + a_5 = \frac{1}{2}(a_1 + a_5 + a_2 + a_4 + a_3)$$

$$\Rightarrow 2a_1 + 2a_2 + 2a_3 + 2a_4 + 2a_5 = a_1 + a_5 + a_2 + a_4 + a_3$$

$$\frac{1}{2}(a_1 + a_5) = \frac{1}{2} \times \frac{1}{2}(a_1 + a_5) = \frac{1}{4}(a_1 + a_5)$$

$$\Rightarrow \frac{a_2 + a_1}{a_1 + a_5} = \frac{1}{2} = 2 \Rightarrow 2a_2 + 2a_5 = a_1 + a_5$$

$$2(a_2 + a_5) = a_1 + a_5$$

$$4a_2 = 2a_1 \Rightarrow 2a_2 = a_1$$

$$2a_2 = a_1 + 10d$$

$$\Rightarrow 2a_2 = 10d$$

$$2a_2 = 10d$$

$$\Rightarrow 2a_2 = 10d \Rightarrow a_2 = 5d$$

$$\frac{a_2}{a_1} = \frac{a_1 + d}{a_1} = \frac{10d}{10d} = 1$$

$$t_n = t_{n-1} + 10$$

(2) 14

$$t_2 = t_1 + 10 = t_1 + 10 \Rightarrow d = 10$$

$$t_n - t_0 = (t_1 - t_0) + (t_2 - t_1) + \dots + (t_n - t_{n-1}) = 10 + 10 + \dots + 10 = 10n$$

$$\Rightarrow \frac{t_n - t_0}{t_1 - t_0} = \frac{10n}{10} = n = \frac{10 - (t_1 - t_0)}{t_1 - t_0} = \frac{10}{10} = 1 \checkmark$$

مربعين، 12

$$a_1 = 1(1 - \sqrt{2})$$

(2) 11

$$a_{12} = 1 + \sqrt{2} = a_1 + 12d \Rightarrow 12d = 12\sqrt{2} \Rightarrow d = \sqrt{2} \checkmark$$

$$d = \frac{b - a}{n - 1} = \frac{1 + \sqrt{2} - (1 - \sqrt{2})}{12 - 1} = \sqrt{2}$$

$$a_{n+1} = 11 = a_1 + nd \Rightarrow nd = 9$$

(9)

$$a_1 = 2$$

(2)

$$d = \frac{a_2 - a_1}{2 - 1} = \frac{5 - 2}{1} = 3 \Rightarrow a_{n+1} = 2 + 3n = 11 \Rightarrow n = 3 \checkmark$$

$$a_n + a_{n+1} = a_r + a_{r+1}$$

(2) 10

$$\Rightarrow n + n + 1 = r + r + 1$$

$$\Rightarrow 2n = 2r \Rightarrow n = r$$

$$a_n = r(a_r)$$

$$d = r a_r \Rightarrow r a_r + r d = 0$$

$$a_r = a_1 + r d = 0 \Rightarrow a_r = 0 \checkmark$$