

دھرم

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$$5, 9, 13, 17, \dots \quad d = 4 \quad t_n = t_1 + (n-1)d \Rightarrow t_1 = 5 \quad d = 4 \quad \boxed{t_n = 4n + 1}$$

$$t_{10} = 4(10) + 1 = \boxed{41}$$

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$$7, 10, 13, 16, \dots \quad d = 3 \quad t_n = 7 + (n-1)3 = 3n + 4$$

$$S_n = \frac{n}{2} (t_1 + t_n) \Rightarrow S_{10} = \frac{10}{2} [7 + (10-1)3] \Rightarrow \underline{S_{10} = 145}$$

$$a_{19}, a_{20}, a_{21}, a_{22}$$

$$a_{20} + a_{21} = a_1 + a_{40} = 2a_1 + 39d = 2 \times 7 + 39 \times 3 = 145 \Rightarrow 2(a_{20} + a_{21}) = 145 \Rightarrow \boxed{a_{20} + a_{21} = 72.5}$$

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$$t_1 - t_1 = 2 - (1 + \sqrt{3}) = 2 - 1 - \sqrt{3} = 1 - \sqrt{3} \Rightarrow t_2 - t_1 = (2 - \sqrt{3}) - 2 = 1 - \sqrt{3} \quad d = 1 - \sqrt{3}$$

$$t_{10} - t_{10} = 2(1 - \sqrt{3}) \quad t_n = (1 + \sqrt{3}) + (n-1)(1 - \sqrt{3}) \Rightarrow t_{10} = (1 - \sqrt{3}) + 9(1 - \sqrt{3}) = 10 - 8\sqrt{3}$$

$$\Rightarrow 22 - 21\sqrt{3} \Rightarrow t_{10} = (1 + \sqrt{3}) + 9(1 - \sqrt{3}) = 10 - 8\sqrt{3}$$

$$t_{10} - t_{10} = (10 - 8\sqrt{3}) - (22 - 21\sqrt{3}) = \boxed{-12 + 13\sqrt{3}}$$

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$$b_1 - b_1 = b_2 - b_1 \quad 2 - x = y - 2 \quad x + y = 4 \quad a_1 = \Delta^2 x \quad a_2 = 3 \times 2 \Delta^2 x \quad a_3 = \Delta^2 y$$

$$a_2 = 3 \times 2 \Delta^2 x = 6 \Delta^2 x \quad a_3 - a_1 = a_2 - a_1 \quad 3 \times 2 \Delta^2 x - \Delta^2 x = \Delta^2 y - 2 \times \Delta^2 x$$

$$\Delta^2 + 2\Delta^2 = \Delta^2 y \Rightarrow 1 + 2x = y \Rightarrow x + (2x + 1) = 4 \quad 3x = 3 \Rightarrow \underline{x = 1}$$

$$y = 2(1) + 1 = 3 \quad xy = 1 \times 3 = \boxed{3}$$

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$$d = t_2 - t_1 = t_2 - t_1 \Rightarrow d = (2x - 1) - (2x - 4) = 2x - 1 - 2x + 4 = 3$$

$$2 = 4x - (2x + 1) = 4x - 2x + 1 = 2x + 1 \Rightarrow 2 = 2x + 1 \quad x = \frac{1}{2} \Rightarrow t_1 = 2\left(\frac{1}{2}\right) - 1 = -1$$

$$t_2 = 2\left(\frac{1}{2}\right) - 1 = 0 \quad t_3 = 2\left(\frac{1}{2}\right) = 1 \quad t_4 = t_3 + d = 1 + 3 = \boxed{4}$$

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$$a_n = 2 + (n-1)2 = 2n+1 \quad 2i+1 = 3j+1 \quad i = \frac{3j-2}{2} \quad 3j-2 = \text{باید زوج باشد}$$

$$b_n = 2 + (n-1)3 = 3n-1$$

$$j = 4, 6, 8, 10, 12, 14 \Rightarrow b_4, b_6, b_8, b_{10}, b_{12}, b_{14} \Rightarrow \Delta, 11, 17, 23, 29, 35, 41$$

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لا جمله مشترک

$$a_n = a_1 + (n-1)d \quad a_1 + (a_1+d) + (a_1+2d) = 21 \Rightarrow a_1 + (a_1+2d) + (a_1+4d) = 10\Delta$$

$$a_1 + 2d = 3\Delta \quad a_1 + d = 7(a_1 + 2d) - (a_1 + d) = 3\Delta - 7 = d = 28 \Rightarrow a_1 + d = 7 \Rightarrow a_1 = 7 - 28 = -21$$

$$a_3 - a_2 + a_1 = 3\Delta - 7 + (-21) = 7 \quad \boxed{-\frac{1}{3} \text{ برابر}}$$

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$$a_n = a_1 + (n-1)d \Rightarrow a_1 + a_2 + a_3 = 1\Delta \Rightarrow a_1 + (a_1+d) + (a_1+2d) = 1\Delta$$

$$a_4 + a_5 = 2\Delta \Rightarrow (a_1+3d) + (a_1+4d) = 2\Delta \Rightarrow 2a_1 + 7d = 2\Delta \quad a_1 = \Delta - d$$

$$2(\Delta - d) + 7d = 2\Delta \Rightarrow \Delta d = 1\Delta \Rightarrow d = 2 \quad a_1 = 2$$

$$a_{10} = a_1 + 9d = 2 + 9(2) = 2 + 18 = 20 = a_{10} \quad \boxed{20 = a_{10}}$$

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$$S_n = \frac{n}{2} [2a_1 + (n-1)d] \quad S_3 = \sum_1^3 [2a_1 + 2d] = 3(a_1 + d) \Rightarrow \frac{9}{2} (2a_1 + 2d) = 9[2(a_1 + d)]$$

$$2a_1 + 2d = 3(a_1 + d) \xrightarrow{\times 2} 4a_1 + 4d = 6a_1 + 6d \Rightarrow 2a_1 + 2d - 4a_1 - 4d = 0 \Rightarrow d = 2a_1 - 1$$

$$a_n = a_1 + (n-1)d \Rightarrow a_{10} = a_1 + 9d = a_1(1+38) = 39a_1 \quad a_5 = a_1 + 4d = a_1(1+12) = 13a_1$$

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$$\frac{39}{13} = 3 \quad \checkmark$$

$$a_1 = 11 \quad a_5 = 3\Delta \quad 3\Delta = 11 + 4d \Rightarrow 4d = 2\Delta \quad \underline{d = 5}$$

$$a_5 = 11 + 3d = 11 + 15 = 26 \Rightarrow a_5 = 38 + 3d = 23 \Rightarrow 3d = -15 \Rightarrow d = -5$$

$$a_n = 38 + (n-1)(-5) = 13 \Rightarrow n-1 = 4-2 = 2 \quad \boxed{2}$$

و اینطوری

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