

$$t_n = 5, 9, 13, 17$$

$$a) 4n+1$$

$$b) 4(9)+1=37$$

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$$t_n = 1 + \sqrt{3}, 2, 3 - \sqrt{3}$$

$$t_{23} = 23 - 23\sqrt{3} + 2\sqrt{3} = 23 - 21\sqrt{3}$$

$$t_{25} = 25 - 25\sqrt{3} + 2\sqrt{3} = 25 - 23\sqrt{3}$$

$$t_n = n(1 - \sqrt{3}) + 2\sqrt{3}$$

$$t_{25} - t_{23} = 2 - 2\sqrt{3}$$

جواب سوال ۳

$$S_n = \frac{n}{2}(2a_1 + (n-1)d) \Rightarrow \frac{n}{2}(2 + (n-1)4) \Rightarrow \frac{n}{2}(4n-2) \Rightarrow \frac{n}{2}(2n-1) \Rightarrow \frac{n(2n-1)}{2}$$

$$t_{29} = t_1 + 28d = 1 + 28(4) = 113$$

$$t_{29} = 113 \Rightarrow 113 + 122 + 127 + 130 = 492$$

جواب سوال ۲

$$2x - 4 = \frac{1}{x} \Rightarrow 2x^2 - 4x = 1 \Rightarrow 2x^2 - 4x - 1 = 0 \Rightarrow x = \frac{4 \pm \sqrt{16 + 8}}{4} = \frac{4 \pm \sqrt{24}}{4} = \frac{4 \pm 2\sqrt{6}}{4} = \frac{2 \pm \sqrt{6}}{2}$$

$$-\frac{11}{4}, -\frac{3}{4}, -\frac{1}{4} \Rightarrow t_f = -\frac{11}{4}$$

جواب سوال ۱

$$3x^2 - 5x = 5 - 3x^2 \Rightarrow 3x^2 + 3x^2 - 5x = 5 \Rightarrow 6x^2 - 5x = 5 \Rightarrow 6x^2 - 5x - 5 = 0 \Rightarrow x = \frac{5 \pm \sqrt{25 + 120}}{12} = \frac{5 \pm \sqrt{145}}{12}$$

جواب سوال ۴

$$y = 2x + 1 \Rightarrow x = 1 \Rightarrow y = 3 \Rightarrow xy = 3$$

$$xy = 3$$

$$2x + 1 = y$$

$$a_n = v_{n+1} \Rightarrow \omega, 11, 1v, 2w, 3q, 4a, 5f \} \Rightarrow \text{مستقیم } V$$

$$b_n = w_{n-1} \Rightarrow \omega, 11, 1v, 2w, 3q, 4a, 5f \}$$

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$$t_1 + t_2 + t_3 = 21 \Rightarrow t_1 + (t_1 + d) + (t_1 + 2d) = 21 \Rightarrow 3t_1 + 3d = 21 \Rightarrow t_1 + d = 7$$

$$t_1 + t_2 + t_3 = 10\omega \Rightarrow t_1 + (t_1 + 2d) + (t_1 + 4d) = 10\omega \Rightarrow 3t_1 + 6d = 10\omega \Rightarrow t_1 + 2d = \frac{10}{3}\omega$$

$$(7 - d) + 2d = \frac{10}{3}\omega \Rightarrow 7 + d = \frac{10}{3}\omega \Rightarrow d = \frac{10}{3}\omega - 7 \Rightarrow t_1 = 7 - \frac{10}{3}\omega = -\frac{10}{3}\omega + 7$$

$$= -\frac{10}{3}\omega + 7, 1v, 2w, 3q, 4a, 5f \Rightarrow \omega = \frac{7 - \frac{10}{3}\omega + 7}{- \frac{10}{3}\omega + 7} = 7 \Rightarrow \frac{7}{- \frac{10}{3}\omega + 7} = \boxed{\text{برابر 3}}$$

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$$t_1 + t_2 + t_3 = 1\omega \xrightarrow{\omega=2} 1, \omega, 1 = \omega \Rightarrow t_2 + t_3 = \omega \Rightarrow 11 + 15 = \omega$$

$$\underbrace{1, \omega, 1, 11, 15}_{\substack{1 \\ 1 \\ 1 \\ 1 \\ 1}} \Rightarrow w_{n-1} = 1 \Rightarrow w(10) - 1 = \boxed{99}$$

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$$s_n = \frac{n}{p}, s_n = \frac{n}{p} (a_1 + a_n) \Rightarrow \begin{cases} s_4 = \frac{4}{p} (a_1 + a_4) \\ s_3 = \frac{3}{p} (a_1 + a_3) \end{cases} \Rightarrow \frac{4}{p} (a_1 + a_4) = \frac{3}{p} (a_1 + a_3)$$

$$\frac{4 \times 20}{4 \times 20} = \frac{a_1 + 19d}{a_1 + 4d} = \frac{\frac{d}{p} + 19d}{\frac{d}{p} + 4d} = \frac{19d}{d} = 19 \Rightarrow \frac{19d}{d} = 19$$

$$a_1 + a_4 = 3a_1 + 3a_3 \Rightarrow 4a_1 + 3(a_1 + 3d) - (a_1 + 19d) = 0 \Rightarrow 4a_1 + 3a_1 + 9d - a_1 - 19d = 0 \Rightarrow 6a_1 - 10d = 0 \Rightarrow 3a_1 = 5d \Rightarrow a_1 = \frac{5d}{3}$$

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$$t_1 = 11 \Rightarrow \frac{10\omega - 11}{\omega - 1} = \frac{15}{\omega} = 1 \Rightarrow \omega = 15 \Rightarrow t_2 = 15$$

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$$15, 15, 15, 15, 15 \Rightarrow \frac{15 - 15}{\omega} \Rightarrow d = \frac{15 - 15}{\omega} = 0$$

مستقیم 15 و 15 و 15 و 15 و 15