

الف) $t_n = 3n^2 - 1$ $\rightarrow$ (1) $3(1)^2 - 1 = 2$ ✓ (2) $3(2)^2 - 1 = 11$ ✓ (3) $3(3)^2 - 1 = 24$ ✓ (4) $3(4)^2 - 1 = 47$ ✓ (5) $3(5)^2 - 1 = 74$ ✓

ب) $t_n = \frac{2(n)+1}{n+4}$ $\rightarrow$ (1) $\frac{2(1)+1}{1+4} = \frac{3}{5}$ ✓ (2) $\frac{2(2)+1}{2+4} = \frac{5}{6}$ ✓ (3) $\frac{2(3)+1}{3+4} = \frac{7}{7} = 1$ ✓ (4) $\frac{2(4)+1}{4+4} = \frac{9}{8}$ ✓ (5) $\frac{2(5)+1}{5+4} = \frac{11}{9}$ ✓

الف) $t_n = \frac{(-1)^n}{\sqrt{n+3}}$ $\rightarrow$ (1) $\frac{(-1)^1}{\sqrt{1+3}} = \frac{-1}{\sqrt{4}} = \frac{-1}{2}$ ✓

ب) $t_n = 2n - \left[\frac{n}{4}\right]$ $\rightarrow$ (1) $2(1) - \left[\frac{1}{4}\right] = 2 - 0 = 2$ ✓ (2) $2(2) - \left[\frac{2}{4}\right] = 4 - 0 = 4$ ✓ (3) $2(3) - \left[\frac{3}{4}\right] = 6 - 0 = 6$ ✓ (4) $2(4) - \left[\frac{4}{4}\right] = 8 - 1 = 7$ ✓ (5) $2(5) - \left[\frac{5}{4}\right] = 10 - 1 = 9$ ✓

الف) $t_n = 2n - 10 \rightarrow n = 1, 2, 3, 4, 5, 6, 7, 8$ $t_n = -8, -6, -4, -2, 0, 2, 4, 6$

ب) $t_n = n^2 - 14n + 40 \rightarrow t_n = (n-10)(n-4)$ $n = (4, 10)$ $+ \frac{4}{1} - \frac{10}{1} +$

الف) $t_n = 2n - 14$ $n = 1, 2, 3, 4, 5, 6, 7, 8$ $t_n = -12, -10, -8, -6, -4, -2, 0, 2$

ب) $t_n = n^2 - 12n + 27$ $t_n = (n-9)(n-3)$ $n = (3, 9)$ $+ \frac{3}{1} - \frac{9}{1} +$

$t_n = a + (n-1)d \Rightarrow t_{10} = 4$

$t_4 \Rightarrow a + 3d = 1 \Rightarrow a = 1 - 3d$ $t_9 \Rightarrow a + 8d = 22 \Rightarrow 1 - 3d + 8d = 22 \Rightarrow 5d = 21 \Rightarrow d = \frac{21}{5}$

$a = 1 - (3 \times \frac{21}{5}) = 1 - 12.6 = -11.6$ $t_{10} = a + 9d = -11.6 + (9 \times \frac{21}{5}) = 4$

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الف) $t_n = n^2 - 4n + 2$ جوابات $t_1 = 1 - 4 + 2 = -1$
 $t_2 = 4 - 8 + 2 = -2$ $t_3 = 9 - 12 + 2 = -1$ $t_4 = 16 - 16 + 2 = 0$
 $t_5 = 25 - 20 + 2 = 7$ $t_6 = 36 - 24 + 2 = 14$ $t_7 = 49 - 28 + 2 = 23$ $t_8 = 64 - 32 + 2 = 34$ $t_9 = 81 - 36 + 2 = 47$ $t_{10} = 100 - 40 + 2 = 62$

ب) $t_n = n^2 + 4n + 1$ تستین مقدار به ازای $n=1$ مقدار ۶ است $t_1 = 1 + 4 + 1 = 6$
 $t_2 = 4 + 8 + 1 = 13$ $t_3 = 9 + 12 + 1 = 22$ $t_4 = 16 + 16 + 1 = 33$ $t_5 = 25 + 20 + 1 = 46$ $t_6 = 36 + 24 + 1 = 61$ $t_7 = 49 + 28 + 1 = 78$ $t_8 = 64 + 32 + 1 = 97$ $t_9 = 81 + 36 + 1 = 118$ $t_{10} = 100 + 40 + 1 = 141$

این دنباله از ضمن درجه دو است و هم شماره نشود!

سوال ۷ $t_n = -1, -7, -13, -19, -25, -31, -37, -43, -49, -55, -61, -67, -73, -79, -85, -91, -97, -103, -109, -115, -121, -127, -133, -139, -145, -151, -157, -163, -169, -175, -181, -187, -193, -199, -205, -211, -217, -223, -229, -235, -241, -247, -253, -259, -265, -271, -277, -283, -289, -295, -301, -307, -313, -319, -325, -331, -337, -343, -349, -355, -361, -367, -373, -379, -385, -391, -397, -403, -409, -415, -421, -427, -433, -439, -445, -451, -457, -463, -469, -475, -481, -487, -493, -499, -505, -511, -517, -523, -529, -535, -541, -547, -553, -559, -565, -571, -577, -583, -589, -595, -601, -607, -613, -619, -625, -631, -637, -643, -649, -655, -661, -667, -673, -679, -685, -691, -697, -703, -709, -715, -721, -727, -733, -739, -745, -751, -757, -763, -769, -775, -781, -787, -793, -799, -805, -811, -817, -823, -829, -835, -841, -847, -853, -859, -865, -871, -877, -883, -889, -895, -901, -907, -913, -919, -925, -931, -937, -943, -949, -955, -961, -967, -973, -979, -985, -991, -997, 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۱۴۰۴/۴/۱۰

$$(-\infty, a+\varepsilon] \cup [2a+1, +\infty) = [2a+1, a+\varepsilon]$$

$$2a+1 = a+\varepsilon \Rightarrow 2a-a = \varepsilon-1$$

یعنی اگر $a+\varepsilon$ برتر از $2a+1$ باشد
استرکاب باز، برحالیته می شود!

$$(-\infty, 2+\varepsilon] \cup [2 \cdot 2+1, +\infty) = (-\infty, 2] \cup [5, +\infty) = \mathbb{R}$$

$$\Rightarrow a=3$$

سوال ۱۰

$$(3n) = 3, 4, 9, \dots, 99 \Rightarrow \frac{99-3}{3} + 1 = \frac{96}{3} + 1 = 33$$

$$(5n) = 5, 10, \dots, 100 \Rightarrow \frac{100-5}{5} + 1 = \frac{95}{5} + 1 = 20$$

$$(15n) = 15, 30, \dots, 90 \Rightarrow \frac{90-15}{15} + 1 = \frac{75}{15} + 1 = 6$$

$$n(3 \cup 5) \Rightarrow n(3) + n(5) + n(3 \cap 5)$$

$$33 + 20 - 6 = 47$$

آواحاتی - دهم تجربی ۳