نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ...۱۱... کلاس ...دهم A...

۱

$a_{10} = 10^2 + \left(\frac{10\times 9}{2}\right) = 145$

۱، ۵، ۱۱، ۲۲

$1^2+\left(\frac{1\times 0}{2}\right)$ / $2^2+\left(\frac{2\times 1}{2}\right)$ / $3^2+\left(\frac{3\times 2}{2}\right)$ / $4^2+\left(\frac{4\times 3}{2}\right)$ $\Rightarrow$ جمله n ام $= n^2+\left(\frac{n\times(n-1)}{2}\right)=a_n$

۲

۰، ۱، ۳

$\frac{1\times 0}{2}$ / $\frac{2\times 1}{2}$ / $\frac{3\times 2}{2}$ $\Rightarrow a_n = \frac{n(n-1)}{2} \Rightarrow \frac{n(n-1)}{2} = 55 \Rightarrow 110 =$

$n(n-1) \Rightarrow n = 11$

۳

۵، ۹، ۱۳ $\Rightarrow 4n+1 = a_n$ زوجی

۵، ۱۳، ۲۱ $\Rightarrow a_n = 8n-3$ کل

$\Rightarrow$ $a_{11} = (4\times 11)+1 = 45$

$a_{11} = (8\times 11) - 3 = 85$

۴

$a_n = \frac{(-1)^n}{n} \Rightarrow$ ب $= \frac{(-1)^2}{2} = \frac{1}{2}$ ، ک $= \frac{(-1)^1}{1} = -1$ $\Big\} = \frac{+1}{2} - (-1) = \frac{3}{2}$

۵

$b_4 = \underbrace{(-2)^3}_{-27} - (1\times 21) = -48$ / $a_n = -3n+22 \Rightarrow -3n+22 = -48 \Rightarrow 3n = -70$

$\Rightarrow n = 14$

۶

$a_{10} - a_7 = 12 \Rightarrow a_1 + 9d - (a_1 + 6d) = 12 \Rightarrow 3d = 12 \Rightarrow d = 4$

$a_6 - a_1 = (a_1 + 5d) - a_1 = 5d = 5 \times 4 = 20$

۷

$a_2 = 7 \,/\, a_4 = 15 \Rightarrow d = \frac{a_m - a_n}{m-n} = \frac{15-7}{4-2} = 4 \Rightarrow a_1 + d = 7 \Rightarrow$

$a_1 + 4 = 7 \Rightarrow a_1 = 3 \,/\, a_3 = a_1 + 2d = 3 + 8 = 11 \,/\, 3, 11, \dots \;(+8) \Rightarrow a_n = 8n - 5$

or $a_n = a_1 + (n-1)d = 3 + 8n - 8 = 8n - 5$

۸

$t_n = \frac{2}{5}, \frac{6}{7}, \frac{10}{9}, \frac{14}{11}, \dots$ (numerators $+4$, denominators $+2$) $\Rightarrow a_n = \frac{4n-2}{2n+3} \Rightarrow \frac{4n-2}{2n+3} < \frac{3}{2} \Rightarrow$

$8n - 4 < 6n + 9 \Rightarrow 2n < 13 \Rightarrow n < 6/5 \Rightarrow$ ۶ تا

$\frac{2}{5}, \frac{6}{7}, \frac{10}{9}, \frac{14}{11}, \frac{18}{13}, \frac{22}{15}$

۹

$t_n = 6, 9, 9, 6, 0, \dots$

first differences: $+3, 0, -3, -6$; second differences: $-3, -3, -3$

$(3 \times -1.5) + (5 \times 7.5) = 33$ (-4.5, 37.5)

$2a = -3 \Rightarrow a = -1.5$

$3a + b = 3 \Rightarrow -4.5 + b = 3 \Rightarrow b = 7.5$

$a + b + c = 6 \Rightarrow 6 + c = 6 \Rightarrow c = 0$

$\Rightarrow -1.5n^2 + 7.5n + 0$

۱۰

$t_n = -6, -4, 0, \dots$ (first differences $+2, +4$; second difference $+2$)

$2a = 2 \Rightarrow a = 1$

$3a + b = 2 \Rightarrow 3 + b = 2 \Rightarrow b = -1$

$a + b + c = -6 \Rightarrow 1 - 1 + c = -6 \Rightarrow c = -6$

$\Rightarrow n^2 - n - 6 = t_n$

$a_n = 0, 31, 0, 41 \Rightarrow d = \frac{a_m - a_n}{m-n} = \frac{41-31}{4-2} = \frac{10}{2} = 5$

$31 = a_1 + d \Rightarrow a_1 = 26 \Rightarrow a_n = 5n + 21$

جمله مشترک ⇓

$5n + 21 = n^2 - n - 6 \Rightarrow 27 = n^2 - 6n$

$n(n-6) \Rightarrow n = 9$