۱۶:۳۰
۱۸:۳۰

نام و نام خانوادگی ارشیا شیربابایی ...... پاسخنامه تشریحی تکلیف شماره ۳ کلاس دهم ت ۸ ......

۱

$t_1 = 40$

$t_4 = 61$ $\Big\}\ 3d = 21 \qquad d = 7$

$t_4 = t_1 + 3d = 40 + (4-1)d = 61$

$40 + (n-1)7 = 208 \qquad (n-1)7 = 168$

$\underline{n = 25}$

۲

$\underline{101} \longrightarrow (7\times 14) + 3$ کوچکترین

$\underline{997} \longrightarrow (7\times 142) + 3$ بزرگترین

$\dfrac{997 - 101}{7} + 1 = \underline{129}$

۳

$a_{n+1} = a + nd\ ,\ a_{n+2} = a(n+1)d\ ,\ a_{n+3} = a(n+2)d \xrightarrow{\text{جمع}} 3a + (3n+3)d = -6n + 12$

$\longrightarrow 3a + 3(n+1)d = -6n + 12 \xrightarrow{\div 3} a + (n+1)d = -2n + 4$

$\left.\begin{array}{l} n=1 \longrightarrow a + 2d = -2 + 4 = 2 \\ n=2 \longrightarrow a + 3d = -4 + 4 = 0 \end{array}\right\}\ d = -2 \qquad a + 2(-2) = 2 \longrightarrow a - 4 = 2,\ a = 6$

$\left.\begin{array}{l} a_{17} = a + 16d = 6 + 16(-2) = 6 - 32 = -26 \\ a_8 = a + 7d = 6 + 7(-2) = 6 - 14 = -8 \end{array}\right\}\ -26 + (-8) = \underline{-34}$

۴

$a_3 = 2^x - 1\ ,\ a_8 = 2^{x+1}\ ,\ a_{13} = 2^{2x} - 3 \qquad 2b = a + c \to b = \dfrac{a+c}{2} \to a_8 = \dfrac{a_3 + a_{13}}{2} = \dfrac{(2^x - 1) + (2^{2x} - 3)}{2}$

$\longrightarrow \dfrac{(2^x - 1) + (2^{2x} - 3)}{2} = 2^{x+1} \longrightarrow 2^x + 2^{2x} - 4 = 2^{x+2} \longrightarrow 3\times 2^x - 2^{2x} + 4 = 0$

$(3\times 2^x) - (2^x)^2 + 4 = 0 \longrightarrow 2^x = A \longrightarrow A^2 - 3A - 4 = 0 \qquad A = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \dfrac{3 \pm \sqrt{25}}{2} \begin{cases} 4\ ✓ \\ -1\ ✗ \end{cases}$

$2^x = 4 \longrightarrow x = 2 \qquad \begin{cases} a_3 = 3 \\ a_8 = 2^3 = 8 \\ a_{13} = 2^4 - 3 = 13 \end{cases} \qquad 13 + 8 + 3 = \underline{24}$

۵

$a_{12} = a_{10} + 2d \longrightarrow 2d = 5 \qquad a_{10} + a_{10} = 2a_1 + \underbrace{20d}_{50} = 25 \qquad 2a_1 = -25,\ a_1 = -12.5$

$a_{21} = a_1 + 20d = -12.5 + 50 = 37.5$

۵ جمله اول $\rightarrow 5a+10d$

۵ جمله دوم $\rightarrow 5a+35d$

$$3(5a+10d)=5a+35d$$
$$15a+30d=5a+35d$$
$$10a=5d$$
$$a=\frac{d}{2}$$

$$\frac{a_2}{a_1}=\frac{a+d}{a}=\frac{\frac{d}{2}+d}{\frac{d}{2}}=\frac{\frac{3d}{2}}{\frac{d}{2}}=3$$ برابر

۶

$t_9=a+8d,\ t_5=a+4d,\ t_7=a+6d \longrightarrow t_9=a+40,\ t_5=a+20,\ t_7=a+30$

$t_n=t_{n-3}+15 \rightarrow t_n-t_{n-3}=15 \longrightarrow a+(n-1)d-a+(n-4)d=3d \longrightarrow 3d=15$

$d=5$

$$\frac{t_9^2-t_5^2}{t_7}=\frac{(a+40)^2-(a+20)^2}{a+30}=\frac{20\,(2a+60)}{a+30}=\frac{40\,\cancel{(a+30)}}{\cancel{a+30}}=40$$ برابر

۷

$2(1-6\sqrt{3})=\underset{(1)}{\underline{2-12\sqrt{3}}}\ ,\ \underset{(2)}{\underline{2+\sqrt{3}}} \longrightarrow a_{14}=a+13d \qquad (1)+13d=(2)$

$2-12\sqrt{3}+13d=2+\sqrt{3} \longrightarrow 13d=2-2+\sqrt{3}+12\sqrt{3}=13\sqrt{3}$

$$d=\frac{\cancel{13}\sqrt{3}}{\cancel{13}}=\sqrt{3}$$

۸

$2,\ 32 \longrightarrow 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32 \longrightarrow n=3$

$+3\ \ +3 \qquad\qquad +3\ \ +3 \qquad (4\times 3)-3=9$

واسطه $4n-3$

واسطه n ام $=11$

۹

$a_n+a_{n+2}=a_2+a_{17} \longrightarrow a+(n-1)d+a+(n+1)d=a_1+2d+a_1+16d$

$\longrightarrow 2a_1+2(nd)\cancel{-d}\cancel{+2d}=2a_1+\underset{16d}{\cancel{18d}}=2(nd)=16d=nd=8d$

$n=8$

$a_8=2(a_4) \Rightarrow \cancel{a+7d}=\cancel{2d+6d} \Rightarrow 2a+2d=0$

$a+d=0 \rightarrow a+d=a_2$

صفر

۱۰