پرنیان دهقان پور | دهم دختر ۹ | تکلیف ۱۳

$t_1=40$ $t_4=61$ $t_1+3d=61$ $61-40=3d$ 21 $d=7$ $t_n=t_1+(n-1)d$ $208=40+(n-1)7$ $208=40+7n-7$ $175=7n$ $\boxed{n=25}$ $208-33=175$ $175 \div 7 = 25$	۱
$t_n=7n+3$ $100\leqslant 7n+3<1000$ $14\leqslant n\leqslant 142$ $142-14+1=129$ $100\leqslant 7n+3$ $97\leqslant 7n$ $13/...\leqslant n \Rightarrow 14$ $7n+3<1000$ $7n<997$ $n<142/...$	۲
$a_{n+1}+a_{n+2}+a_{n+3}=-6n+12$ $a_1+nd+a_1+(n+1)d+a_1+(n+2)d=-6n+12$ $3a_1+\underbrace{3nd+3d}=-6n+12$ $3nd=-6n$ $3d=-6$ $\boxed{d=-2}$ $3a_1+3d=12$ $a_1+d=4 \Rightarrow a_1-2=4$ $\boxed{a_1=6}$ $a_{17}+a_8=a_1+16d+a_1+7d$ $2a_1+23d \Rightarrow 2(6)+23(-2)$ $12-46=-34$	۳
$t_3=2^x-1=3$ $t_8=2^x+1=8$ $t_{13}=2^{2x}-3=13$ $t_3+t_{13}=t_8+t_8$ $(2^x-1)+(2^{2x}-3)=2(2^x+1)$ $2^{2x}+2^x-4=2^{x+2}$ $\frac{2^{2x}}{2^x}+\frac{2^x}{2^x}-\frac{4}{2^x}=\frac{2^{x+2}}{2^x} \Rightarrow 2^{(x+2)-x}=2^{2x-x}+1-\frac{4}{2^x}$ $2^2=2^x+1-\frac{4}{2^x} \Rightarrow 3=\frac{2^x}{1}-\frac{4}{2^x}$ $3(2^x)=2^{2x}-4$ $2^{2x}-4-3(2^x)=0$ $(2^x-4)(2^x+1)=0$ $2^x=4$ $\boxed{x=2}$ $2^2-1+2^2+1+2^4-3$ $4-1+8+16-3$ 24	۴
$a_{12}-a_{10}=5$ $2d=5$ $a_{10}+a_{12}=25$ $2a_{12}=30$ $a_{12}=15$ $a_1+11d=15$ $2d=5$ $2a_1+20d=25$ $(2d)(10)=50$ $2a_1=-25$ $a_1=-12/5$ $a_{21}=a_1+\underbrace{20d}_{10(2d)}$ $a_{21}=-12/5+10(5)$ $a_{21}=-12/5+50=37/5$	۵

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$$\frac{5}{2}(a_1+a_5) = \frac{1}{3}\left(\frac{5}{2}(\overset{a_1+5d}{a_6}+\overset{a_1+9d}{a_{10}})\right)$$

$$\frac{5}{2}(2a_1+4d) = \frac{5}{3\times 2}(2a_1+14d)$$

$$(5a_1+10d = \frac{5}{3}a_1+\frac{35}{3}d)$$

$$15a_1+30d = 5a_1+35d \qquad 10a_1 = 5d$$

$$2a_1 = d \rightarrow a_1 = \frac{d}{2}$$

$$\frac{a_2}{a_1} = \frac{\overset{d/2}{\cancel{a_1}}+d}{\underset{d/2}{a_1}}$$

$$\frac{\frac{3d}{2}}{\frac{d}{2}} = \frac{6d}{2d} = 3$$

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$$t_n = t_{n-3}+15$$

$$3d = 15$$

$$d = 5$$

$$t_9^2 - t_5^2 = (t_9 - t_5)(t_9+t_5)$$

$$\overbrace{a_1+8d \quad a_1+4d}$$

$$\underbrace{(4d)}_{20}(\underbrace{2a_1+12d}_{2t_7})$$

$$\frac{t_9^2-t_5^2}{t_7} = \frac{40\cancel{t_7}}{\cancel{t_7}} \Rightarrow$$ ۴۰ برابر

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$$\frac{b-a}{n+1} = d \qquad \frac{2+\sqrt{3}-(2(1-6\sqrt{3}))}{13}$$

$$\frac{2+\sqrt{3}-2+12\sqrt{3}}{13}$$

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

۹

تعداد کل جمله ها = واسطه + ۲ $\qquad \overset{2}{a_1} \qquad \overset{32}{a_{4n-1}}$

$$4n-3+2 = 4n-1$$

$$a_{n+1} = 11 \qquad d = \frac{32-2}{4n-2} = \frac{30}{4n-2}$$

$$a_1+nd = 11$$

$$2 \quad nd = 9 \qquad n\left(\frac{30}{4n-2}\right) = 9 \qquad \frac{30n}{4n-2} = 9 \qquad 36n-18 = 30n$$

$$6n = 18 \quad \boxed{n=3}$$

۱۰

$$t_n + t_{n+4} = t_3 + t_{17}$$

$$n+n+4 = 3+17$$

$$2n = 16$$

$$n = 8$$

$$3 = \frac{t_n}{t_{\frac{n}{2}}} = \frac{t_8}{t_4} = 3 \qquad 3(t_4) = t_8$$

$$3(t_1+3d) = t_1+7d$$

$$3t_1+9d = t_1+7d$$

$$2t = -2d \qquad t_1 = -d$$

$$t_1 = t_1$$

$$t_2 = t_1(n-1)\underset{-t_1}{d} = 0$$

جمله دوم

$$t_1+d = 0$$