$t_1 = 40, \quad t_4 = 61$

$t_4 = t_1 + 3d$

$61 = 40 + 3d \Rightarrow d = 7$

$t_n = t_1 + (n-1)d = 40 + 7n - 7 = 208$ 11

$7n = 175$

$n = 25$

$100 < 7n + 2 < 1000 \qquad 14, \dots, 142$ 12

$13/\dots < n < 142/\dots \qquad \frac{142 - 14}{1} + 1 = 129$

$a_{n+1} + a_{n+2} + a_{n+3} = -6n + 12$ 13

$a_n + d + a_n + 2d + a_n + 3d = -6n + 12$

$a_n + 2d = -2n + 4$

$a_{17} = a_{15} + 2d = -2 \times 15 + 4 = -26$ $\qquad a_{17} + a_8 = -26 - 8 = -34$

$a_8 = a_6 + 2d = -2 \times 6 + 4 = -8$

$t_2 = 2^x - 1 \qquad \frac{2^{x+1} - 2^x + 1}{6} = \frac{2^{2x} - 2 - 2^{x+1}}{6} \qquad a_2 + a_8 + a_{14} = 24$ 14

$t_8 = 2^{x+1}$

$t_{14} = 2^{2x} - 2 \qquad 2^{x+2} - 2^x - 2^{2x} = -4 \qquad 2^x(4 - 1 - 2^x) = -4$

$3 \times 2^x - 2^{2x} = -4 \Rightarrow x = 2$

$2^x - 1 + 2^x - 1 + 1 \cdot d = 2^{x+1} - 2 + 1 \cdot d$

$t_{11} - t_{10} = 5$

$t_{10} + t_{12} = 25 \Rightarrow t_{12} = 15, \quad t_{10} = 10$ 15

$t_{12} = t_{10} + 2d \Rightarrow d = \frac{5}{2}$

$15 \quad 10$

$t_{21} = t_{12} + 9d = 10 + \frac{45}{2} = \frac{65}{2} = 32.5$

$\frac{5}{2}(2a_1+14d)=\frac{15}{2}(2a_1+4d)$ ۶)

$2d=4a_1$

$d=2a_1$

$\Downarrow$

$\frac{a_2}{a_1}=\frac{a_1+d}{a_1}=\frac{3a_1}{a_1}=$ (۳ برابر)

t_5+4d ۷)

$t_9=t_6+15=t_6+3d \Rightarrow d=5$ $\quad t_9=t_1+8d$

$t_8=t_5+15$ $\quad t_5=t_1+4d$

$t_7=t_4+15$

$20=4d \quad 2t_1+12d$

$\frac{(t_9-t_5)(t_9+t_5)}{t_7}=\frac{40(t_1+6d)}{t_1+6d}=40$

$d=\frac{2+\sqrt{3}-2+13\sqrt{3}}{14}=\frac{14\sqrt{3}}{14}=\sqrt{3}$ ۸)

$a_{n+1}=11 \quad a_1+nd=11 \quad 2+nd=11$ ۹)

$a_{4n-1}=32 \quad 2+(4n-2)d=32 \rightarrow 36n-18=30n$

$\frac{9}{n}$ $\quad 6n=18 \Rightarrow n=3$

$a_n+a_{n+4}=a_3+a_{17}$

$a_1+(n-1)d+a_1+(n+3)d=a_1+2d+a_1+16d$

$(2n+2)d=18d$ ۱۰.

$n=8$

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$a_n = \frac{1}{2}a_{n-1} + 4 \quad \frac{n}{1} = 4$

$a_1 + (n-1)d = 2(a_1 + 15d)$ $\quad (a_{11} = 0 \rightarrow a_1 + (11-1)d = 0)$

$a_1 = -(11-1)d$

$(n-1)d - 9d = 4a_1$

$(n-10)d = 4a_1$ $\quad n-10 = -11+2 \quad 4x = 12-m$

$n = 12$ $\quad x = \frac{12-m}{2}$