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نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ..۱۲... کلاس ....

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الف)

$t_n = 5, 9, 13, 17, \dots$ (differences: $+4, +4, +4$)

$4n+1$

ب)

$4(10)+1 = \boxed{41}$

(۲)

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الف)

$t_n = 6, 10, 14, 18, \dots$ (differences: $+4, +4, +4$) ✓

$S_{10} = \frac{10}{2}\left(2(6) + (10-1)4\right) = \frac{10}{2}(12+36)$ ✓

$= \boxed{240}$ ✓

ب)

$4 \times 8 = 32$

~~$t_{30} + t_{31} + t_{32} = 3t_{31}$~~

~~$t_{31} = t_1 + 30d \to t_{31} = 6 + 30(4)$~~

~~$= \boxed{126}$~~

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$1+\sqrt{3}, 2, 3-\sqrt{3}, \dots$ (differences: $+1-\sqrt{3}, +1-\sqrt{3}$)

$d = 1-\sqrt{3}$

$a_{25} - a_{23} = a_1 + 24d - a_1 - 22d = 2d$

$2d = 2(1-\sqrt{3}) = \boxed{2 - 2\sqrt{3}}$

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$a_n = 5^{2x}, \underbrace{3 \times 25^x}_{3 \times 5^{2x}}, 5^y$

$b_n = x, 2, y$

$2 - x = y - 2$

$y = 4 - x$

$a_2 - a_1 = a_3 - a_2$

$3 \times 5^{2x} - 5^{2x} = 5^y - (3 \times 5^{2x})$

$2 \times 5^{2x} = 5^y - (3 \times 5^{2x})$

$5^y = 5^{2x}(2+3) = 5^{2x} \times 5 = 5^{2x+1} \to y = 2x+1$

$2x + 1 = 4 - x$

$x = 1$

$y = 4 - 1 = 3$

$xy = 1 \times 3 = \boxed{3}$

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$2x-4, 2x-1, 6x$ (differences: $+3, +3$)

$d = (2x-1) - (2x-4) = 3$

a_2, a_3:

$2x - 1 - (2x-4) = 3$

$6x - (2x-1) = 4x + 1 = 3 \to \boxed{x = \frac{1}{2}}$ ✓

$a_4 = a_1 + 3d$

$a_2 = 2x - 4 \to 1 - 4 = -3, \quad d = 3$ ✓

~~$a_1 = a_2 - d = -3 - (3) = -6$~~

~~$a_4 = -6 + 3(3) = \boxed{3}$~~

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$\to -3, 0, 3, (6)$ (differences: $+3, +3, +3$)

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$a_n = 3, 5, 7, \ldots$ ($+2$, $+2$) $2n+1$ $2(20)+1=41$

$b_n = 2, 5, 8, \ldots$ ($+3$, $+3$) $3n-1$

$5, 11, \ldots, 41$ ($+6$) $6n-1$ $\frac{41-5}{6}+1 = \frac{36}{6}+1 = 6+1 = \boxed{7}$

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$a_1+a_2+a_3=21 \rightarrow a_1+a_1+d+a_1+2d=21 \rightarrow 3a_1+3d=21 \rightarrow a_1+d=7$

$a_1+a_3+a_5=105 \rightarrow a_1+a_1+2d+a_1+4d=105 \rightarrow 3a_1+6d=105 \rightarrow a_1+2d=35$

$d=28 \downarrow$ $a_1=-21$

$\left.\begin{matrix} a_2=7 \\ a_3=35 \end{matrix}\right) d=28$

$a_3-a_2+a_1$

$35-7+(-21)=\boxed{7}$

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$a_1+a_2+a_3=15$

$3a_2=15$

$a_2=5$

$a_2=a_1+d$

$5=a_1+3$

$a_1=2$

$a_4+a_5=25$

$a_2+2d+a_2+3d=25$

$2a_2+5d=25$

$10+5d=25$

$5d=15$

$d=3$

$t_{10}=a_1+9d$

$t_{10}=2+9(3)=\boxed{29}$

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$S_9 = 3S_3$

$\frac{9}{2}(2a_1+8d) = 9\times\frac{3}{2}(2a_1+2d)$ $\times\frac{2}{9}$

$\frac{9}{2}(2a_1+8d) = \frac{27}{2}(2a_1+2d)$

$2a_1+8d = 3(a_1+2d) \rightarrow 2a_1+8d = 6a_1+6d$

$\rightarrow 8d-6d = 6a_1-2a_1 \rightarrow 2d=4a_1 \rightarrow d=2a_1$

$a_{20}=a_1+19d = a_1+19(2a_1)$
$= a_1+38a_1 = 39a_1$

$a_7=a_1+6d=a_1+6(2a_1)$
$=a_1+12a_1=13a_1$

$\frac{a_{20}}{a_7} = \frac{39a_1}{13a_1} = \boxed{3}$

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$a_1=11$

$a_7=35$

$a_7=a_1+6d$

$35=11+6d$

$d=4$

$a_n=11+(n-1)4$

$b_1=38$

$b_n=13$

$b_n=b_1+(n-1)d$

$13=38+(n-1)d$

$(n-1)d=-25$

$d=\frac{-25}{n-1}$

$a_4=11+3\times 4=23$

$b_4=b_1+3d_2=38+3\left(\frac{-25}{n-1}\right)=38-\frac{75}{n-1}$

$38-\frac{75}{n-1}=23 \rightarrow \frac{75}{n-1}=15$

$\rightarrow n-1=5 \rightarrow n=6$

واسطه‌ها: $n-2 \rightarrow 6-2=\boxed{4}$

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