

نام و نام خانوادگی: سن: پاسخنامه تشریحی تکلیف شماره ۱۰۰ کلاس:	
$t_1 = 40$ $t_2 = 41 \Rightarrow t_1 + 1d \Rightarrow 41 \Rightarrow 1d \Rightarrow 1 \Rightarrow d = 1$ $t_1 + d(n-1) = 108 \Rightarrow 40 + 1(n-1) = 108 \Rightarrow \frac{1(n-1)}{1} = \frac{108-40}{1}$ $\Rightarrow n-1 = 68 \Rightarrow \boxed{n=69}$ ✓	۱
$100 \leq V_n + 3 \leq 999$ $\Rightarrow 97 \leq V_n \leq 996 \Rightarrow 14 \leq n \leq 142$ $\frac{142-14}{1} + 1 = \boxed{129}$ ✓	۲
$a_{n+1} + a_{n+2} + a_{n+3} = -4n + 12 \Rightarrow a_{n+2} = \frac{a_{n+1} + a_{n+3}}{2} \Rightarrow$ $2a_{n+2} = -4n + 12 \Rightarrow a_{n+2} = -2n + 6 \Rightarrow n+2 = n \Rightarrow n = n-2$ $a_{(n-2)+2} = -2(n-2) + 6 \Rightarrow a_n = -2n + 6 + 4 \Rightarrow -2n + 10$ $a_{14} = -2(14) + 10 = -28 + 10 = -18$ ✓	۳
$a_r = a_1 + rd = r^{x+1}$ $a_n = a_1 + nd = r^{x+1}$ $a_{12} = a_1 + 12d = r^{12}$ $d = \frac{a_n - a_r}{n - r} = \frac{r^{x+1} - (r^x - 1)}{n - r}$ $d = \frac{a_{12} - a_n}{12 - n} = \frac{r^{12} - r^{x+1}}{12 - n}$ $r^{x+1} - r^x + 1 = r^{12} - r^{x+1} \Rightarrow r^{x+1} + r^{x+1} = r^{12} - r^x + 1 \Rightarrow 2r^{x+1} = r^{12} - r^x + 1$ $x = 2 \Rightarrow r^3 - 1 = 3, r^{2+1} = 8, r^{12} - r^2 = 13, 13 + 1 + 5 = \boxed{19}$ ✓	۴
$t_{12} - t_{10} = 5$ $t_{12} + t_{10} = 10$ $t_{12} = t_{10} + 2d \Rightarrow (t_{10} + 2d) - t_{10} = 5 \Rightarrow d = 2.5$ $t_{12} = 10 - t_{10} \Rightarrow 10 - t_{10} = t_{10} + 2d \Rightarrow 10 = 2t_{10} + 2d \Rightarrow 5 = t_{10} + d$ $t_{10} = 5 - d = 5 - 2.5 = 2.5$ $t_{12} = 10 - 2.5 = 7.5$ $t_{11} = a + 10d \Rightarrow -12.5 + (2.5)10 = \boxed{13.5}$ ✓	۵

$$S_0 = \frac{1}{r}(S_1 - S_0) \Rightarrow rS_0 = S_1 - S_0 \Rightarrow rS_0 = S_1$$

$$S_n = \frac{n}{r}(ra_1 + (n-1)d) \Rightarrow r \times \frac{0}{r}(ra_1 + \ell d) = \frac{10}{r}(ra_1 + 9d) \Rightarrow$$

$$r(a_1 + \ell d) = ra_1 + 9d \Rightarrow ra_1 + \ell d = ra_1 + 9d \Rightarrow ra_1 = d \Rightarrow a_1 = \frac{d}{r}$$

$$a_r = a_1 + d \Rightarrow a_r = \frac{r}{r}d$$

$$a_1 = \frac{1}{r}d \Rightarrow \frac{\frac{r}{r}d}{\frac{1}{r}d} = \boxed{r} \checkmark$$

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$$t_n = t_{n-r} + 10 \Rightarrow a_1 + (n-1)d = a_1 + (n-\ell)d + 10 \Rightarrow nd - d = nd - \ell d + 10$$

$$rd = 10 \Rightarrow d = 5$$

$$t_9 = a_1 + 8d, t_0 = a_1 + \ell d \Rightarrow t_9 = t_0 + \ell d \Rightarrow$$

$$t_9 - t_0 \Rightarrow (t_9 - t_0)(t_9 + t_0) \Rightarrow rd \times (t_0 + \ell d) \Rightarrow \ell d(t_0 + \ell d) = \ell d(a_1 + 4d)$$

$$a_0 = a_1 + 4d$$

$$\frac{\ell d(a_1 + 4d)}{a_1 + 4d} = \ell d \Rightarrow \ell(5) = \boxed{40}$$

$$a_1 = 2(1 - 4\sqrt{3}) \quad a_n = 2 + \sqrt{3} \quad n = 14$$

$$a_{14} = a_1 + 13d \Rightarrow 2 + \sqrt{3} = 2(1 - 4\sqrt{3}) + 13d \Rightarrow 2 + \sqrt{3} = 2 - 12\sqrt{3} + 13d$$

$$13\sqrt{3} = 13d \Rightarrow \boxed{d = \sqrt{3}} \checkmark$$

$$a_1 = 2 \quad a_n = 32 \quad m = 3n - \ell + 2 = 3n - 2 \Rightarrow 32 = 2 + ((3n - 2) - 1)d \Rightarrow$$

$$30 \cdot (3n - 3)d \Rightarrow 30 = 3(n-1)d \Rightarrow 10 = (n-1)d \Rightarrow d = \frac{10}{n-1}$$

$$\Rightarrow a_{n+1} = a_1 + (n+1-1)d = a_1 + nd \Rightarrow 11 = 2 + n\left(\frac{10}{n-1}\right) \Rightarrow 9 = \frac{10n}{n-1}$$

$$9n - 9 = 10n \Rightarrow \boxed{n = -9}$$

راهنمایین برهه نوشته شد!

$$t_n + t_{n+\ell} = t_r + t_{14} \Rightarrow n + (n+\ell) = 2 + 14 \Rightarrow 2n + \ell = 16 \Rightarrow n = 8$$

$$t_n = 3a_1 \Rightarrow t_n = 3 \times t_\ell \Rightarrow t_n = a_1 + 7d = 3(a_1 + (\ell-1)d)$$

$$a_1 + 7d = 3a_1 + 9d \Rightarrow 2a_1 = -2d \Rightarrow a_1 = -d$$

$$t_k = a_1 + (k-1)d = 0 \Rightarrow -d + kd - d = 0 \Rightarrow d(-1 + k - 1) = 0$$

$$d(k-2) = 0 \Rightarrow \boxed{k = 2} \checkmark$$

$4n-3$ واسطی حسابی درج ششست پس 32 صمدی $4n-1$ است!

$$a_{4n-1} = \cancel{a_1}^2 + (4n-2)d = 32 \rightarrow (4n-2)d = 31 \rightarrow (2n-1)d = 15$$

واسطی n ام صمدی $n+1$ است!

$$a_{n+1} = \cancel{a_1}^2 + nd = 11 \rightarrow nd = 9$$

$$2nd - d = 15 \xrightarrow{nd=9} \begin{cases} d=3 \\ n=3 \end{cases}$$