

نام و نام خانوادگی کلاس پاسخنامه تشریحی تکلیف شماره ۱۳۰	
$a_1 = 40$ $a_n = 40 + (n-1) \times 7$ $a_{24} = 41$ $208 = 40 + (n-1) \times 7$ $7(n-1) = 168$ $n-1 = 24$ $n = 25$	۱
کوچکترین : ۱۰۱ بزرگترین : ۹۹۷ $\frac{997-101}{7} + 1 = \frac{896}{7} + 1 = 128 + 1 = 129$	۲
$a_n = a_1 + (n-1)d$ $3a_1 + 3(n+3)d = -5n + 12$ $3d = -5 \rightarrow d = -\frac{5}{3}$ $3a_1 + 3d = 12 \rightarrow 3a_1 - 5 = 12 \rightarrow a_1 = \frac{17}{3}$ $a_{14} = a_1 + 13d = \frac{17}{3} + 13(-\frac{5}{3}) = -\frac{58}{3}$ $a_{18} = a_1 + 17d = \frac{17}{3} + 17(-\frac{5}{3}) = -\frac{74}{3}$ $-\frac{58}{3} + (-\frac{74}{3}) = -\frac{132}{3} = -44$ $a_{n+1} + a_{n+3} + a_{n+5} = 3a_1 + (3n+3)d$	۳
$a_r = r^x - 1$ $a_8 = r^{x+1}$ $a_{12} = r^{x+2}$ $a_{13} - a_8 = a_8 - a_r$ $(r^{x+2} - r) - (r^{x+1}) = (r^{x+1}) - (r^x - 1)$ $r^{x+2} - r^{x+1} - r = r^{x+1} - r^x + 1$ $r^{x+2} - r^{x+1} - r^{x+1} + r^x - r = 0$ $(r^{x+2} - r)(r^x - 1) = 0 \rightarrow r^x = 4$ $a_r = r^x - 1 = 3$ $a_8 = r^8 = 8$ $a_{12} = r^{12} - 1 = 13$ $3 + 8 + 13 = 24$	۴
$a_n = a_1 + (n-1)d$ $a_{10} - a_{12} = 5 \rightarrow (a_1 + 9d) - (a_1 + 11d) = -2d = 5 \rightarrow d = -\frac{5}{2}$ $a_{10} + a_{12} = 24 \rightarrow (a_1 + 9d) + (a_1 + 11d) = 2a_1 + 20d = 24 \xrightarrow{d=-\frac{5}{2}} a_1 = \frac{37}{2}$ $a_{10} = a_1 + 9d$ $a_{12} = a_1 + 11d$ $a_{21} = a_1 + 20d = \frac{37}{2} + 20(-\frac{5}{2}) = -\frac{63}{2}$	۵

$S_1^a = \frac{a}{r} (a_1 + a_n)$ $S_1^b = \frac{a}{r} (a_4 + a_{10})$ $S_1^a = \frac{1}{r} S_1^b$ $\downarrow$ $a_1 + a_n = \frac{1}{r} (a_4 + a_{10}) \rightarrow r a_1 + r d = \frac{1}{r} (r a_1 + 4 r d) \Rightarrow r a_1 + 4 r d = r a_1 + r d \Rightarrow r a_1 = r d \rightarrow a_1 = d$	6
$t_n = t_{n-r} + 1a$ $t_n = t_1 + (n-1)d$ $t_1 + (n-1)d = t_1 + (n-r)d + 1a$ $(n-1)d - (n-r)d = 1a$ $r d = 1a \rightarrow d = \frac{a}{r}$ $\Rightarrow t_n = t_1 + (n-1) \frac{a}{r}$ $\begin{cases} t_7 = t_1 + r_0 \\ t_v = t_1 + r_0 \\ t_n = t_1 + r_0 \end{cases}$ $\begin{aligned} t_v &= t_1 + r_0 \rightarrow t_1 = t_v - r_0 \\ t_7^r - t_n^r &= r_0 (t_v - r_0) + 1 r_0 = r_0 t_v \\ t_7^r - t_n^r &= (t_7 - t_n)(t_7 + t_n) \\ t_7 - t_n &= (t_1 + r_0) - (t_1 + r_0) = r_0 \\ t_7 + t_n &= (t_1 + r_0) + (t_1 + r_0) = 2t_1 + 2r_0 \\ t_7^r - t_n^r &= (t_7 - t_n)(t_7 + t_n) = r_0 (2t_1 + 2r_0) \\ t_7^r - t_n^r &= 2r_0 t_1 + 2r_0^2 \end{aligned}$	7
$a_1 = r(1 - 9\sqrt{r}) \quad a_{10} = r + \sqrt{r}$ $a_n = a_1 + (n-1)d$ $r + \sqrt{r} = r(1 - 9\sqrt{r}) + 10d$ $r + \sqrt{r} = r - 9r\sqrt{r} + 10d$ $10d = (r + \sqrt{r}) - (r - 9r\sqrt{r}) = \sqrt{r} + 9r\sqrt{r} = 10r\sqrt{r}$ $d = \frac{10r\sqrt{r}}{10} = r\sqrt{r}$	8
$r, a_1, a_r, a_n, a_r, r_r \rightarrow r, \lambda, 1d, r, r_2, r_r$ $a_1 = r + d$ $a_r = r + r d$ $a_n = r + r d$ $a_r = r + r d$ $r_r = r + d \rightarrow d = r$ $d = \frac{b-a}{n+1}$ $11 = \frac{r+1}{r}$	9
$a_n + a_{n+r} = d r + a_{1v}$ $a_n = r a_{\frac{n}{r}}$	10