

کلاس دهم A دفتر جمع ۱۸:۳۰ و ۱۶:۳۰	تکلیف شماره ۱۵ دکتر ورناله	پرتو پرورش ۱۷/۱۵
$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) = 21 \quad a_1 \times a_2 \times a_3 = 64 \rightarrow a_1^3 \times q^3 = 64 \rightarrow a_1 q = 4, a_1 = \frac{4}{q}$ $\frac{4}{q} \cdot \frac{(q^3 - 1)}{q - 1} = 21 \rightarrow q^2 + q + 1 = \frac{21}{4} q \quad q^2 - \frac{17}{4} q + 1 = 0$ $q = \frac{\frac{17}{4} \pm \sqrt{\frac{289}{16} - 4}}{2} \quad q = \left[\frac{17}{4} \times 3 \right] \rightarrow \text{مسایه انت}$		۱
$(x^2 - 2)(x^2 + 4) = 4x^2 \quad x^4 + 2x^2 - 8 - 4x^2 = 0$ $\xrightarrow{x^2 = a} a^2 + 2a - 8 - 4a = 0 \Rightarrow a^2 - 2a - 8 = 0 \quad a = \frac{2 \pm 6}{2} \rightarrow \begin{cases} a = 4 \rightarrow x^2 = 4 \\ a = -2 \rightarrow \text{حالت اولی} \end{cases}$ $x = \pm 2 \rightarrow -2 \text{ و } 2 \xrightarrow{\text{کج}} q < 0$ $q = \frac{2m}{x^2 - 2} = 2 \rightarrow 4, 8, 16, \dots$	$S_n = n \left(\frac{r^n - 1}{r - 1} \right) = 8 \times \frac{12^5 - 1}{12 - 1} = 1015$	۲
$S_5 = a_1 + a_1 \cdot q + a_1 \cdot q^2 + a_1 \cdot q^3 + a_1 \cdot q^4 = a_1 (1 + q + q^2 + q^3 + q^4) =$ $243 \times \frac{121}{11} = 263$	$\downarrow \quad \underbrace{\qquad\qquad\qquad}_{\frac{17}{11}}$	۳
$\text{واسط حسابی} \rightarrow d = \frac{b - a}{n + 1} = \frac{64 - 1}{5} = \frac{63}{5} = \frac{12}{5} \quad \text{جمله وسط} \quad A = t_5 = b_1 + 4d$ $1 + \frac{(4 \times 12)}{5} = \frac{60}{5} \rightarrow A = 32/5$ $\text{واسط هندسی} \rightarrow q^{n+1} = \frac{b}{a} \quad q^5 = 64 \rightarrow q = 2 \quad \text{جمله وسط} \quad a_5 = a_1 q^4 = 1 \times 2^4 = 16$ $B = 8 \rightarrow A + B = 32/5 + 8 = 40/5$ $q = -2 \rightarrow B = -8 \rightarrow A + B = 24/5$		۴
$a_{101} = -24 + (100) \left(-\frac{95}{5} \right) + 24 = 1$ $a_n = \left(128 \times \frac{a_1}{128} \right)^n = 1 \quad \frac{a^5}{128} = 1 \quad a^5 = \sqrt[5]{128} = 2^5 \rightarrow a = 64$ $q = \frac{a}{128} = \frac{64}{128} = \frac{1}{2}$		۵

$t_r, t_v, t_g \xrightarrow{\text{ضرب}} t_r \times t_g = t_v^2 \quad t_r = t_1 + r d \quad t_v = t_1 + s d \quad t_g = t_1 + n d \Rightarrow$ $(t_1 + r d)(t_1 + n d) = (t_1 + s d)^2 \rightarrow t_1^2 + 1 r n d^2 + 1 n d t_1 = t_1^2 + 2 s d t_1 + 1 s^2 d^2$ $r n d^2 + 1 n d t_1 = 0 \quad r n (d + t_1) = 0 \quad \left[\begin{array}{l} d = 0 \text{ خ } \\ d = -t_1 \end{array} \right. \rightarrow \text{این قابل قبول نیست}$ $r n d^2 + 1 r d t_1 = 0$ $d = 0 \quad d = -\frac{t_1}{10}$	۷
$t_r, t_g, t_n \xrightarrow{\text{ضرب}} t_r \times t_n = t_g^2$ $(t_1 + r d)(t_1 + n d) = (t_1 + s d)^2 \rightarrow (t_1 + r d)^2 = (t_1 + d)(t_1 + n d)$ $t_1^2 + 2 r d t_1 + r^2 d^2 = t_1^2 + (1+n) d t_1 + n d^2$ $2 r d t_1 + r^2 d^2 = (1+n) d t_1 + n d^2 \rightarrow r d^2 = 1 + n d \xrightarrow{d \neq 0} d = t_1 \xrightarrow{\text{دنباله هندسی}} t_1, r t_1, r^2 t_1, \dots$ $\xrightarrow{\text{دنباله هندسی مورد نظر}} r t_1, r^2 t_1, n t_1 \Rightarrow q_v = r$ $a_1 = \frac{1}{r} \Rightarrow a_1 = a_1 \times q_v^r = \frac{1}{r} \times r^9 = 128$	✓
$\underbrace{r a_r}_{t_1}, \underbrace{r a_r}_{t_r}, \underbrace{a_g}_{t_g} \rightarrow r a_q, r a q^r, a q^r \Rightarrow r a q + a q^r = r a q^r$ $t_1, t_r, t_g \rightarrow t_1 + t_r - r t_r$ $r q^r (r + q^r) = t_1 q^r \rightarrow r + q^r - r q = 0 \Rightarrow q = \frac{r \pm 2}{r} \quad \left[\begin{array}{l} \text{✓} \\ \text{عق ۱} \end{array} \right]$	۸
$r, \frac{r}{f}, 0, \dots \rightarrow t_1 = r \quad d = -\frac{1}{f} \quad \checkmark$ $t_g, t_n, t_{12} \rightarrow r - \frac{r}{f}, r - \frac{r}{f}, r - \frac{12r}{f}$ $\checkmark \quad \frac{0}{f} \quad \checkmark \frac{1}{f} \quad \checkmark \frac{12}{f}$ $-1 + m, \frac{1}{f} + m, \frac{0}{f} + m \rightarrow \text{ضرب} \Rightarrow (-1 + m) \left(\frac{0}{f} + m \right) = \left(\frac{1}{f} + m \right)^2 \rightarrow$ $\frac{-r1}{1f} = \frac{1}{f} m \Rightarrow m = \frac{-r1}{f} \xrightarrow{\text{دنباله}} \frac{-r0}{f} = \frac{r}{f} - r \Rightarrow q = -\frac{r}{f} \div -\frac{r0}{f} = \frac{f}{0}$	۹
$\underbrace{a_r}_{t_1} + \underbrace{a_r}_{t_r} + \underbrace{a_v}_{t_v} = v r \quad t_1 + t_r + d + t_1 + n d = r t_1 + 1 \cdot d = v r \quad \textcircled{1}$ $\frac{a_r}{a_g} = \frac{t_r}{t_1} = q^r \text{ و } \frac{a_v}{a_r} = \frac{t_v}{t_r} = q^r \rightarrow \frac{t_v}{t_r} = \frac{t_r}{t_1} \rightarrow t_v^r = t_1, r t_{12}$ $(t_1 + d)^r = (t_1 + n d) t_1 \rightarrow t_1^r + d^r + r d t_1 = t_1^r + n d t_1 \rightarrow d^r - n d t_1 = 0$ $d(d - n t_1) = 0 \quad \left[\begin{array}{l} d = 0 \text{ خ } \\ d = n t_1 \end{array} \right. \quad \textcircled{2} \rightarrow \text{قابل قبول نیست}$ $12r \Rightarrow r t_1 + 12 t_1 = v r t_1 = v r \Rightarrow t_1 = 1 \text{ و } d = v$	۱۰