الناسیانی

Subject..................

Day...... Month...... Year..........

۱) $\{۱\}, \{۲, ۳, ۴\}, \{۵ \ldots \ldots \{۶۵, \ldots, ۸۱\}$

$۸^۲+۱ \Leftarrow ۸^۲ = ۶۴+۱$ ، $۹^۲$

$\Rightarrow b = \frac{a+c}{۲} = \frac{۸^۲+۱+۹^۲}{۲} = \frac{۱۴۶}{۲} = ۷۳$

۲) $\{۱, ۲, ۳\}, \{۴, ۵, ۶, \ldots, ۱۲\}, \{۱۳, ۱۴, \ldots, ۳۹\}, \{۴۰, ۴۱, \ldots, ۱۲۰\},$

$\{۱۲۱, ۱۲۲, \ldots, ۳۶۳\} \Rightarrow \frac{۳۶۳+۱۲۱}{۲} = ۲۴۲$

۳) $۲^k \; ; \; n = ۳k \Rightarrow n = ۰, ۳, ۶, ۹ \Rightarrow ۲^۰, ۲^۱, ۲^۲, ۲^۳ \Rightarrow ۱, ۲, ۴, ۸$

$-۲k+۴ \; ; \; n = ۳k+۱ \Rightarrow n = ۱, ۴, ۷ \Rightarrow -۲(۰)+۴, -۲(۱)+۴,$

$-۲(۲)+۴ \Rightarrow ۴, ۲, ۰ \}$

$\left[\frac{n}{k+۲}\right] + a, \; n = ۳k+۲ \Rightarrow n = ۲, ۵, ۸ \Rightarrow \left[\frac{۲}{۰+۲}\right] + a,$

$\left[\frac{۵}{۱+۲}\right] + a, \left[\frac{۸}{۲+۲}\right] + a \Rightarrow ۱+a, ۱+a, ۲+a \Rightarrow$

$S_{۱۰} = ۱+۲+۴+۸+۴+۲+۰+۱+a+۱+a+۲+a = ۱۹$

$\Rightarrow ۲۵+۳a = ۱۹ \Rightarrow a = -۲$

$a_۲ + a_۵ + \ldots a_{۲۹} \xrightarrow{n=۳k+۲} \left[\frac{۲}{۰+۲}\right] + a, \left[\frac{۵}{۱+۲}\right] + a, \ldots, \underbrace{\left[\frac{۲۹}{۹+۲}\right] + a}_{\text{۸ تا ۲+a هستند}}$

$\Rightarrow ۱-۲+۱-۲+۸(۲-۲) = -۲$

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$t_n = an^2 + bn + c$ $\xrightarrow{a = \frac{1}{2.}(-a_5)}$ $a = -\frac{1}{5} \Rightarrow t_n = -\frac{1}{5}n^2$ (۲

$a_5 = 14$

$+ bn + c$

$t_5 = 14 \Rightarrow \frac{-1}{5}(5^2) + b(5) + c = 14 \longrightarrow 5b + c = 19 \xrightarrow{\ominus} b = 4$

$c = -1$

$t_7 = 19.2 \Rightarrow \frac{-1}{5}(7^2) + b(7) + c = 19.2 \longrightarrow 7b + c = 27$

$t_n = -\frac{1}{5}n^2 + 4n - 1 \Rightarrow t_{15} \div t_1 = 14 \div \frac{14}{5} = 5$]

(۵

$\begin{cases} a = 4 = b_2 \\ a_1 + 5d = b_1 + d' \end{cases}$, $b_{10} = 0$ $\frac{b_{10}}{d} = \frac{b_1 + 14d'}{d} \Rightarrow \frac{b_{10} + 9d'}{d} = \frac{9d'}{d}$

$\begin{cases} a_n = b_7 \\ a_1 + 7d = b_1 + 9d' \end{cases}$

$a_n - a_4 = b_7 - b_2$

$4d = 5d' \Rightarrow \frac{d'}{d} = \frac{4}{5} \Rightarrow 5 \times \frac{4}{5} = 4$]

(۶ $4(a+d)^2 = 5(a+2d)a + 5(a+d)a \Rightarrow 4a^2 + 4d^2 + 16ad$

$= 5a^2 + 10ad + 5a^2 + 5ad \Rightarrow 0 = 2a^2 - 4d^2 + ad \Rightarrow$

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$(2a-5d)(a+2d)=0 \Rightarrow \begin{cases} (1)\ a=\frac{5d}{2} \Rightarrow \frac{a_2}{d}=\frac{a+5d}{d} \\ (2)\ a=-2d \end{cases}$

$\Rightarrow \begin{cases} (1)\ \frac{\frac{5d}{2}+5d}{d}=\frac{9}{2} \\ (2)\ \frac{-2d+5d}{d}=1 \end{cases}$

$a, b, c \xrightarrow{\text{حسابی}} b, \frac{a}{2}, \frac{c}{4} \Rightarrow a+d, \frac{a}{2}, \frac{a+2d}{4}$ (۷

$a, a+d, a+2d$

$\Rightarrow \frac{\frac{a}{2}}{\frac{a+d}{1}} = \frac{\frac{a+2d}{4}}{\frac{a}{2}} \Rightarrow \frac{a}{2a+2d} = \frac{2a+4d}{4a} \Rightarrow 4a^2 - 4a^2 + 8d^2 + 12ad \Rightarrow 4(2d^2) = 4(-5ad) \Rightarrow d(2d+5a)=0$

$\Rightarrow \begin{cases} (1)\ d=0 \text{ غ ق ق} \\ (2)\ 2d+5a=0 \Rightarrow a=\frac{-2d}{3} \end{cases} \Rightarrow q=\frac{\frac{a}{2}}{a+d}=\frac{\frac{-d}{3}}{\frac{-2d}{3}+d}=\frac{\frac{-d}{3}}{\frac{d}{3}}=-1$

$\Rightarrow 2q=2\times(-1)=-2$

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Month. Year.

$a, b, c \xrightarrow{\text{عدد حسابي}} 2b, 2a, c \Rightarrow 2aq, 2a, aq^2 \Rightarrow$ (1

aq, aq^2

$2a = 2a - 2aq \Rightarrow aq^2 - 4a + 2aq = 0 \Rightarrow a(q-1)(q+2) = 0$

$a = 0$ ✗ مرفوض

$q = 1$ ✗ مرفوض

$q = -2$

$\frac{aq}{aq^0} = \frac{aq^1}{aq^0} = q^2 = (-2)^2 = 4$

$\frac{a_2}{c} + \frac{a_2}{(a)^2} = 2 \Rightarrow \frac{aq^0}{a^2q^2} + \frac{aq}{a^2} = 2 \Rightarrow \frac{q^2+aq}{a^2} = 2$ (9

$q^2 - q^2 - aq = 0 \Rightarrow (2a+q)(a-q) = 0 \Rightarrow \begin{cases} q = -2a \\ a = q \end{cases}$

$= \begin{cases} \frac{a^2}{aq} = \frac{a^2}{a^2} = 1 \\ \frac{a^2}{aq} = \frac{a^2}{-2a^2} = \frac{-1}{2} \end{cases}$

$\sqrt{a_2} \Rightarrow (aq^2)^2 = aq^2 \Rightarrow a^2q^4 = aq^2 \Rightarrow aq = 1$ (10

$aq^4 = 27 = aq \times q^3 = c^3 \Rightarrow q = 3 \Rightarrow a(3)^4 = 27 \Rightarrow a = \frac{1}{3}$

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$a, b, c \xrightarrow{\text{حسابي}} 2b, 2a, c \Rightarrow 2aq, 2a, aq^2 \Rightarrow$ (٨

a, aq, aq^2

$aq^2 - 2a = 2a - 2aq \Rightarrow aq^2 - 4a + 2aq = 0 \Rightarrow a(q-1)(q+4) = 0$

$\Rightarrow \begin{cases} (1)\ a = 0 \times \text{مرفوض} \\ (2)\ q = 1 \times \text{مرفوض} \\ (3)\ q = -4 \end{cases}$

$\Rightarrow \frac{aq}{aq} = \frac{aq^4}{aq^5} = q^3 = (-4)^3 = -64$

$\frac{a_2}{(a_2)^2} + \frac{a_2}{(a)^2} = 2 \Rightarrow \frac{aq^0}{a^2q^2} + \frac{aq}{a^2} = 2 \Rightarrow \frac{q^2 + aq}{a^2} = 2$ (٩

$\Rightarrow 2a^2 - q^2 - aq = 0 \Rightarrow (2a + q)(a - q) = 0 \Rightarrow \begin{cases} (1)\ q = -2a \\ (2)\ a = q \end{cases}$

$\Rightarrow \frac{a^2}{a_2} = \begin{cases} (1)\ \frac{a^2}{aq} = \frac{a^2}{a^2} = 1 \\ (2)\ \frac{a^2}{aq} = \frac{a^2}{-2a^2} = \frac{-1}{2} \end{cases}$

$a_4 = \sqrt{a_8} \Rightarrow (aq^2)^2 = aq^6 \Rightarrow a^2q^4 = aq^6 \Rightarrow aq = 1$ (١٠

$\Rightarrow a_5 = aq^4 = 27 = aq \times q^5 = 5^5 \Rightarrow q = 5 \Rightarrow a(5)^4 = 27 \Rightarrow a = \frac{1}{3}$

$\Rightarrow \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$