فرشته حاجی احمدی

سؤال اول:

$\frac{a}{q} \times a \times aq = a^3 = 64 \Rightarrow a = 4$

$(\frac{4}{q} + 4 + 4q = 21)q = 4 + 4q + 4q^2 = 21q \Rightarrow 4q^2 - 17q + 4 =$

$\Delta = b^2 - 4ac = (-17)^2 - 4(4 \times 4) = 225$

$\Rightarrow q = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{17 \pm \sqrt{225}}{8} = \frac{2}{8} = \frac{1}{4}\} , \frac{32}{8} = 4\} \to$ صعودی

$\Rightarrow$ غیرحسابی $\Rightarrow q = \frac{1}{4}$

سؤال ۲:

$(3n)^2 = (n^2+2)(n^2-2) = 3n^2 = n^4 + 2n^2 - 8$

$\Rightarrow n^4 - 2n^2 - 8 = 0 \Rightarrow (n^2-4)(n^2+2) = 0$

غیرقابل قبول

$\Rightarrow n^2 = 4 \Rightarrow n = \pm 2$

$n = 2 \to 8, 4, 2, \ldots \longrightarrow a_1 = 8 , q = \frac{1}{2} \Rightarrow S_7 = 8\left(\frac{1-(\frac{1}{2})^7}{1-\frac{1}{2}}\right)$

$n = -2 \to 8, -4, 2, \ldots$ غ

$= 16\left(1 - \frac{1}{128}\right) = 16 \times \frac{127}{128} = 15.875$

سؤال ۳:

$S_5 = a_1 + a_1q + a_1q^2 + a_1q^3 + a_1q^4 \Rightarrow a_1(1 + q + q^2 + q^3 + q^4) \quad 243 \quad \frac{121}{81}$

$\Rightarrow S_5 = 243 \times \frac{121}{81} = 363$

30 پنجشنبه
۳۰ فروردین
۹ شوال ۱۴۴۵
18 April 2024

سوال ۴:

$q^6 = \frac{64}{1}, \quad 64 = q^6 \Rightarrow q = 2, -2$

$1, 2, 4, (8), 16, 32, 64$; $8 \rightarrow B$ $\quad \{ \quad 1, -2, 4, -8, 16, -32, 64$; $-8 \rightarrow B$

$d = \frac{64-1}{5+1} = d = 10.5$ $\quad 1, 11.5, 22, 32.5, 43, 53.5, 64$; $32.5 \rightarrow A$

$A + B = \begin{cases} 32.5 + 8 = 40.5 \\ 32.5 - 8 = 24.5 \end{cases}$

سوال ۵:

$\frac{-95}{4} = -23.75 \Rightarrow -24, -23.75, \ldots \quad (+\frac{1}{4})$

$\Rightarrow d = \frac{1}{4}, \quad a_n = -24 + (n-1)\frac{1}{4} \Rightarrow a_{101} = -24 + \overset{25}{100} \times \frac{1}{4} = 1$

$aq^7 = 1 \Rightarrow a = 128 \Rightarrow q^7 = \frac{1}{128} \Rightarrow q = \frac{1}{2}$

سوال ۶:

$(a+2d), (a+6d), (a+8d)$

$\Rightarrow (a+6d)^2 = (a+2d)(a+8d) = a^2 + 36d^2 + 12ad = a^2 + 10ad + 16d^2$

$20d^2 + 2da = 0 \Rightarrow 2d(10d + a) = 0 \begin{cases} d = 0 \quad \text{غ ق ق} \\ 10d = -a \Rightarrow d = \frac{-a}{10} \end{cases}$

جملات ثابت = $-8d$،

$\Rightarrow d = \frac{-a}{10}$

31 جمعه
۳۱ فروردین
۱۰ شوال ۱۴۴۵
19 April 2024

سؤال ۷:

$(a+d), (a+3d), (a+7d)$

$\Rightarrow (a+3d)^2 = (a+d)(a+7d) \Rightarrow a^2 + 9d^2 + 6ad = a^2 + 8ad + 7d^2$

$\Rightarrow 2d^2 - 2ad = 0 \Rightarrow 2d(d-a) = 0 \Rightarrow d = 0$ غ ق ق یا $a = d$ ✓

جملات $= 2d, 4d, 8d, \dots \Rightarrow q = \frac{8d}{4d} = 2$

$t_{10} = t_1 \times q^9 = \frac{1}{4} \times 2^9 = 2^{-2} \times 2^9 = 2^7 = 128$

سؤال ۸:

$3a_2, 2a_3, a_4 \Rightarrow 2(2a_3) = a_4 + 3a_2$

$\Rightarrow 4a_3 = a_4 + 3a_2 \Rightarrow 4(a_1q^2) = a_1q^3 + 3(a_1q)$

$\Rightarrow 4a_1q^2 = a_1q^3 + 3a_1q \Rightarrow a_1q^3 + 3a_1q - 4a_1q^2 = 0$

$\Rightarrow a_1q(q^2 - 4q + 3) = 0 \Rightarrow a_1q = 0$ غ ق ق $\Rightarrow q^2 - 4q + 3 = 0$

$\Rightarrow (q-1)(q-3) = 0$
- $q = 1 \Rightarrow$ غ ق ق غیرثابت
- $q = 3$ ✓

سؤال ۹:

$\frac{8}{4}, \frac{7}{4}, \dots \Rightarrow t_n = \frac{8}{4} + (n-1) \times -\frac{1}{4}$

$d = -\frac{1}{4}$

$\Rightarrow t_4 = \frac{8}{4} + 3 \times -\frac{1}{4} = \frac{5}{4}$ $\qquad (\frac{5}{4} + x), (\frac{1}{4} + x), (-1 + x)$

$t_8 = \frac{8}{4} + 7 \times -\frac{1}{4} = \frac{1}{4}$

$t_{13} = \frac{8}{4} + 12 \times -\frac{1}{4} = \frac{-4}{4} = -1$

$\Rightarrow (\frac{1}{4} + x)^2 = (\frac{5}{4} + x)(-1 + x) = \frac{1}{16} + x^2 + \frac{2}{4}x = x^2 + \frac{1}{4}x - \frac{5}{4}$

$\frac{1}{2}x - \frac{1}{4}x = -\frac{5}{4} - \frac{1}{16} = \frac{1}{4}x = \frac{-20-1}{16} = -\frac{21}{16} \Rightarrow x = -\frac{21}{4}$

نادرستی $= \left(\frac{5}{12} - \frac{21}{12}\right), \left(\frac{1}{12} - \frac{21}{12}\right), \left(-1 - \frac{21}{12}\right) = q$ (above: $-\frac{16}{4}$, $-\frac{20}{12}$, $-\frac{15}{12}$)

$$q = \frac{-\frac{20}{4}}{-\frac{16}{4}} = \frac{-20}{-16} = \frac{5}{4}$$

a, aq^2, aq^4

سؤال ۱۰:

$a, a+d, a+9d \Rightarrow$ جمع $= 3a + 10d = 73$ (above d: $7a$)

$\Rightarrow 3a + 70a = 73 \Rightarrow 73a = 73 \Rightarrow a = 1$

$(a+d)^2 = a(a+9d) \Rightarrow a^2 + d^2 + 2ad = a^2 + 9ad$

$\Rightarrow d^2 - 7ad = 0 \Rightarrow d(d - 7a) = 0 \Rightarrow d = 7a$

$d = 7a = d = 7$ جواب