دهم دفتر B

سری ۱۵

[illegible]

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۱- $\frac{x}{r} + x + xr = 21 \rightarrow \frac{4}{r} + 4 + 4r = 21 \rightarrow \frac{4}{r} + 4r = 17$

$\frac{x}{r} \cdot x \cdot xr = x^3 = 64 \rightarrow x = 4$ $\quad 4 + 4r^2 = 17r \rightarrow 4r^2 - 17r + 4 = 0$

$r^2 - 17r + 16 = 0 \rightarrow r \rightarrow \frac{1}{4} \checkmark ,\ \frac{16}{4} = 4 \times$

۲- $x^2, 4, x^2 - 2$

$(x^2+4)(x^2-2) = 4x^2 \rightarrow x^4 - 2x^2 + 4x^2 - 8 = x^4 + 2x^2 - 8 = 4x^2 \rightarrow x^4 - 8 = 2x^2$

$x^4 - 2x^2 - 8 = 0 \rightarrow x \rightarrow 2, -2$

$x^2(x^2-2) - 8$

$8, 4, 2$ ✓ می‌باشد

$8, -4, 2$

۳- $243 + 243q + 243q^2 + 243q^3 + 243q^4 = 243(1 + q + q^2 + q^3 + q^4) = 243 \times \frac{121}{81} = \boxed{363}$

۴- $1, 11.5, 32, A, B, 64$ $\quad$ قدرنسبت حسابی $= \frac{64-1}{7-1} = \frac{63}{6} = 10.5$

قدرنسبت هندسی $= \frac{ar^6}{a} = \frac{64}{1} = r^6 = 64 \rightarrow r = \pm 2$ $\quad A + B = 32.5 + 8 = \boxed{40.5}$

$1, 2, 4, 8, \ldots, 64$ یا $1, -2, +4, -8, \ldots$ $\quad A + B = 32.5 - 8 = \boxed{24.5}$

۵- $a_n = a + (n-1)d = -24 + (100)d = -24 + (100)\frac{1}{4} = -24 + 25 = 1$

$\frac{-95}{4} + \frac{94}{4} = -\frac{1}{4}$

$t_8 = tq^7 = 128q^7$ $\quad 128q^7 = 1 \rightarrow q^7 = \frac{1}{128} \rightarrow q = \boxed{\frac{1}{2}}$

۶- $a_3, a_7, a_9 \rightarrow$

$a + 2d, a + 6d, a + 8d \rightarrow (a+2d)(a+8d) = a^2 + 12ad + 36d^2$

$a^2 + 8ad + 2ad + 16d^2 \Rightarrow 2ad + 20d^2 = 0 \rightarrow d(2a + 20d) = 0$ $\quad d \rightarrow 0, -\frac{1}{10}a$

۷- $a_2, a_4, a_8 \rightarrow \frac{1}{4}$

$a + d, a + 3d, a + 7d \rightarrow (a+d)(a+7d) = a^2 + 6ad + 9d^2 \rightarrow a^2 + 7ad + ad + 7d^2 = a^2 + 6ad + 9d^2$

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

$\frac{a_4}{a_2} = \frac{4a}{2a} = 2$ $\quad d \rightarrow 0, a$

مانيا اين الرياضيا

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$3a_2 , 2a_3 , a_4 \longrightarrow 3ar , 2ar^2 , ar^3$

$\frac{3ar + ar^3}{2} = 2ar^2 \longrightarrow 3ar + ar^3 = 4ar^2$

$ar(3 + r^2) = 4ar^2 \longrightarrow 3 + r^2 = 4r \longrightarrow r^2 - 4r + 3 = 0$

$r \to 1$, $r \to 3$

۹-

$a_4 + x , a_8 + x , a_{14} + x$

$a + 3d + x , a + 7d + x , a + 13d + x \longrightarrow \frac{5}{4} + x , \frac{1}{4} + x , -1 + x \longrightarrow (\frac{5}{4} + x)(x - 1) = \frac{1}{16} + \frac{1}{2}x + x^2$

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

$x = \frac{-21}{4}$

$q = \frac{\frac{-20}{4}}{\frac{-25}{4}} = \frac{4 \times (-20)}{4 \times (-25)} = \frac{-4}{-5} = \frac{4}{5}$

۱۰-

حسابی n ، هندسی m (as labeled: هندسی n, حسابی m)

$n_1 = m_1$

$n_4 = m_2$

$n_7 = m_{10}$

$n_7 \times n_1 = (n_4)^2 \Rightarrow m_{10} \times m_1 = (m_2)^2$

$\Rightarrow (a + 9d) \times a = (a + d)^2 \Rightarrow 7a = d$

$m_1 + m_2 + m_{10} = 74 \Rightarrow a + (a + 7a) + (a + 63a) = 74$

$74a = 74 \longrightarrow a = 1$

$d = 7$