

$$\text{خطی} \rightarrow a_n = p_n + q$$

$$a_{10} = 0 \rightarrow 10p + q = 0 \rightarrow q = -10p$$

$$a_n = p_n - 10p = p(n - 10)$$

$$a_2 = p(2 - 10) = -8p$$

$$a_7 = p(7 - 10) = -3p$$

$$a_{10} = p(10 - 10) = 0p$$

$$\frac{a_{10}}{d} = \frac{0p}{\frac{2p}{r}} = \boxed{\frac{r}{2}} \checkmark$$

(2) ✓

$$\text{جسبی} \rightarrow A_1 = -1p \quad -c$$

$$A_1 = -2p$$

$$A_n = A_1 + (n-1)d$$

$$A_2 = A_1 + d = -1p$$

$$A_7 = A_1 + 6d = -2p$$

$$A_1 - A_2 = d = 2p$$

$$d = \frac{2p}{r}$$

$$4a_2^2 = 2a_3 \times a_1 + 3a_2 \times a_4 \quad -4$$

$$[2a_2^2 + 10ad + 3a_2^2 + 3ad = 4a_2^2 + 4d^2 + 12ad]$$

$$\downarrow 2a_2^2 + ad - 4d^2 = 0 \xrightarrow{\div d^2} 2\left(\frac{a}{d}\right)^2 + \frac{a}{d} - 4 = 0 \xrightarrow{\frac{x=a}{d}} x^2 + x - 4 = 0$$

$$2x^2 + x - 4 = 0 \Rightarrow x = \frac{-1 \pm \sqrt{1+32}}{4} = \frac{-1 \pm \sqrt{33}}{4} \quad \frac{x=a}{d} = \frac{a}{d}$$

$$\downarrow a = -2d \Rightarrow \frac{a+2d}{d} = \frac{d}{d} = 1$$

$$2a = 2d \Rightarrow a = \frac{2}{r}d \rightarrow \frac{\frac{2}{r}d + 2d}{d} = \frac{4}{r} \quad (2) \checkmark$$

$$b = (a+d), c = (a+2d) \quad -v$$

$$\rightarrow \frac{a+c}{r} = b \rightarrow a+c = rb$$

$$2q = \boxed{-2}$$

$$b \times \frac{c}{r} = \left(\frac{a}{r}\right)^2 \rightarrow \frac{bc}{r} = \frac{a^2}{r} \Rightarrow bc = a^2$$

$$a^2 = bc \Rightarrow (a+d)(a+2d) = a^2 + 2ad + 2d^2 \quad (2) \checkmark$$

$$2ad + d^2 = 0 \rightarrow d(2a + d) = 0 \quad \begin{cases} d=0 \times \\ d = -\frac{2a}{r} \end{cases}$$

$$q \Rightarrow \frac{a}{r} = bq \rightarrow q = \frac{a}{rb} = \frac{a}{r(a+d)} = \frac{a}{r(-\frac{2a}{r})} = -1$$

Arman

$$ac = b^r$$

$$c = aq^r, b = aq \rightarrow 2a - 3b = d = c - 2a$$

$$2a - 3(aq) = aq^r - 2a$$

$$2a - 3aq = aq^r \Rightarrow q^r + 3q - 5 = 0$$

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$$\frac{aq^r}{aq^d} = q^r = 1^r, (-2)^r = -6r$$

$$(q-1)(q+2) = 0$$

$$\leftarrow q = 1 \text{ or } q = -2$$

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$$\frac{a^r}{aq} = \frac{a}{q} = ?$$

$$\frac{aq^d + aq/a^r}{a^r q^r} = r$$

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$$\hookrightarrow q = a \rightarrow \frac{a}{q} = 1$$

$$\hookrightarrow q = -2a \Rightarrow -\frac{a}{q} = -\frac{1}{2}$$

$$\hookrightarrow \frac{q^r + aq}{a^r} = r$$

$$q^r + aq = ra^r$$

$$q = \frac{-a \pm \sqrt{a^2 + 4a^r}}{2} = a, -2a \leftarrow q^r + aq - ra^r = 0$$

$$a_r = \sqrt{a_r} \text{ , } a_d = 2r$$

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$$aq^r = \sqrt{aq^r} \rightarrow a^r q^r = aq^r \Rightarrow aq = 1 \rightarrow q = \frac{1}{a}$$

$$a \times \left(\frac{1}{a}\right)^r = 2r = 2\left(\frac{1}{a}\right)^r = 2r \Rightarrow a = \frac{1}{r} \Rightarrow \frac{1}{r} - \frac{1}{r} = \frac{1}{r}$$

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