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$2^5 = 128$ $a_n = \frac{1}{2} \times 2^{n-1}$ $n = 9$	$\frac{2+10}{2} = 6 \rightarrow a_5$ $a_5 = \frac{1}{2} \times 2^4$ 2^5	$\frac{a_{14}}{a_{13}} = \frac{14-13}{2} = \frac{1}{2}$ 2^4	(الف) $a_n = \frac{1}{2} \times 2^{n-1}$ $a_{10} = \frac{1}{2} \times 2^9 = 2^8$ 2^8
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$\frac{94}{12} = 7.83 \rightarrow 9 = 2$ $a_{10} = 94 \times 2^2 = 376$	2
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$a \times a \times q^2 = a \times q^2 \times a \times q^2$ $a_3 \times a_3 = 3 \times 3 = 9$	$\frac{a \times a \times a \times a \times a \times a \times q^2}{q^2 \times q^2} = a^6 = 27$ $a_3 = 3$	3
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$(\sqrt[4]{2})^2 = 14 \times 1 = 32 = 2^a \times 2^b = 2^5$ $a = 3, b = 2$ $a \leq 2, b \leq 3 \Rightarrow k = 2, 5$	4
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$(x+1)(1-x) = x^2$ $1-x^2 \rightarrow x^2 = \frac{1}{2} \Rightarrow x = \pm \frac{\sqrt{2}}{2}$ $1, 5$	5
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فقط این است

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$$a_r = \sqrt[r]{r \sqrt[r]{s} r}$$

$$a_1 \times a_r = q \rightsquigarrow a_1 = 1, a_r = q$$

$$(a_1 = 1, a_r = r, a_n = q)$$

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$$\frac{1 \times 9}{2} = 4.5$$

$$S_n = a \left[\frac{q^n - 1}{q - 1} \right]$$

(الف)

$$a_n = 1 \times r^{n-1}$$

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$$\frac{1 \times 9}{2} = 4.5$$

$$1 \times \left[\frac{3^{10} - 1}{2} \right] = 3^{10} - 1$$

$$\begin{array}{ccccccc} 2 & 4 & 18 & 54 & 162 & 486 & 1458 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 12 & 36 & 108 & 324 & 972 & 2916 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 8 & 24 & 72 & 216 & 648 & 1944 & 5832 \end{array}$$

$$\begin{array}{ccccccc} a & aq & aq^2 & aq^3 & aq^4 & aq^5 & aq^6 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ a(q-1) & aq(q-1) & aq^2(q-1) & aq^3(q-1) & aq^4(q-1) & aq^5(q-1) & aq^6(q-1) \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ xq & xq & xq & xq & xq & xq & xq \end{array}$$

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قد ثبت به این روش که این است

$$\begin{cases} S = a + aq + aq^2 + \dots + aq^{n-1} \\ qS = aq + aq^2 + aq^3 + \dots + aq^n \end{cases}$$

(ب)

$$a, a+d, a+2d, a+3d, \dots, a+(n-1)d \quad (\text{الف})$$

$$na + d \frac{(n-1)n}{2} = \frac{n}{2} (2a + (n-1)d)$$

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$$S - Sq = a - aq^n$$

$$S(q-1) = a(1-q^n) \rightsquigarrow S = a \left(\frac{1-q^n}{1-q} \right)$$