

$$t_n: a, aq, aq^2, \dots$$

$$q \neq 1$$

$$a + aq + aq^2 = 21 \xrightarrow{aq=1} \frac{1}{q} + 1q + 1 = 21 \Rightarrow 1q - 1 + \frac{1}{q} = 0 \Rightarrow$$

$$aq \times aq \times aq^2 = 1 \Rightarrow a^3 q^3 = 1 \Rightarrow aq = 1$$

$$1q^2 - 1 + \frac{1}{q} = 0 \Rightarrow$$

$$q^2 - 1 + \frac{1}{q} = 0 \Rightarrow (q-1)(q-1) = 0$$

$$q = \frac{1}{1}$$

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$$n^2 + 1, n^2 + 2, \dots$$

$$\frac{1}{n^2 + 1} = \frac{1}{n^2 + 2} \Rightarrow \frac{1}{n^2 + 1} = \frac{1}{n^2 + 2} \Rightarrow$$

$$n^2 - 2n + 1 = 0 \Rightarrow (n-1)(n-1) = 0 \Rightarrow n = 1 \Rightarrow 1, 1, 1 \Rightarrow q = \frac{1}{1}$$

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

$$S_n = a + aq + aq^2 + \dots + aq^{n-1}$$

$$S_n = a + aq + aq^2 + aq^3 + aq^4 = a(1 + q + q^2 + q^3 + q^4) = 343$$

$$A = 1 + 3(10) = 31$$

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$$B = aq^2 = 1 \times (-2)^2 = 1 \Rightarrow A + B = 31 + 1 = 32$$

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$$- \frac{1}{q} \dots \Rightarrow a_n = a + (n-1)d \Rightarrow a_n = \frac{1}{q} n - \frac{1}{q} \Rightarrow$$

$$d = \frac{1}{q}$$

$$t_n = 121, a, \dots \Rightarrow t_n = a_1 \cdot q^n = 121 \cdot q^n = 1 \Rightarrow q^n = \frac{1}{121} \Rightarrow q = \frac{1}{11}$$

$$\begin{array}{c}
 a \quad rca \quad rcaq \\
 \downarrow \quad \downarrow \quad \downarrow \\
 a+td \quad a+td \quad a+td \\
 \downarrow \quad \downarrow \quad \downarrow \\
 b \quad bq \quad bq
 \end{array}
 \left. \vphantom{\begin{array}{c} a \quad rca \quad rcaq \\ \downarrow \quad \downarrow \quad \downarrow \\ a+td \quad a+td \quad a+td \\ \downarrow \quad \downarrow \quad \downarrow \\ b \quad bq \quad bq \end{array}} \right\} \Rightarrow \frac{a+td}{a+td} = \frac{a+td}{a+td} \Rightarrow \frac{a}{a} + \frac{td}{a+td} = \frac{a}{a} + \frac{td}{a+td} = \frac{a}{a} + \frac{td}{a+td}$$

$-rcaq = rcaq \Rightarrow d=0 \Rightarrow d = \frac{a}{10}$ ✓

$$\begin{array}{c}
 a \quad rca \quad rcaq \\
 \downarrow \quad \downarrow \quad \downarrow \\
 a+td \quad a+td \quad a+td \\
 \downarrow \quad \downarrow \quad \downarrow \\
 b \quad bq \quad bq
 \end{array}
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$\frac{a}{a} = \frac{td}{td} \Rightarrow a = td \Rightarrow a = d$ ✓

$$b_n = b \cdot q^n = \left(\frac{1}{f}\right) \cdot q^n = \frac{1}{f} \cdot q^n$$

$$\begin{array}{c}
 rcaq \quad rcaq \quad rcaq \\
 \downarrow \quad \downarrow \quad \downarrow \\
 a+td \quad a+td \quad a+td \\
 \downarrow \quad \downarrow \quad \downarrow \\
 b \quad bq \quad bq
 \end{array}
 \left. \vphantom{\begin{array}{c} rcaq \quad rcaq \quad rcaq \\ \downarrow \quad \downarrow \quad \downarrow \\ a+td \quad a+td \quad a+td \\ \downarrow \quad \downarrow \quad \downarrow \\ b \quad bq \quad bq \end{array}} \right\} \Rightarrow aq - rcaq = rcaq - rcaq \Rightarrow aq - rcaq + rcaq = 0 \Rightarrow aq(q - r + r) = 0$$

$q - r + r = 0 \Rightarrow q = r$ ✓

$$a_n = \frac{1}{f} \cdot \frac{1}{f} \cdot \dots \Rightarrow a_n = -\frac{1}{f}n + \frac{q}{f} \Rightarrow a_n = \frac{q}{f} \pm \frac{b}{f}$$

$d = -\frac{1}{f}$ ✓

$\frac{-1+b}{\frac{1}{f}+b} = \frac{\frac{1}{f}+b}{\frac{q}{f}+b} \Rightarrow \frac{1}{f} + \frac{b}{f} + \frac{1}{f} = \frac{1}{f} + \frac{b}{f} - \frac{q}{f} = \frac{1}{f} - \frac{q}{f}$

$$\begin{array}{c}
 a \quad rcaq \quad rcaq \\
 \downarrow \quad \downarrow \quad \downarrow \\
 a+td \quad a+td \quad a+td \\
 \downarrow \quad \downarrow \quad \downarrow \\
 b \quad bq \quad bq
 \end{array}
 \left. \vphantom{\begin{array}{c} a \quad rcaq \quad rcaq \\ \downarrow \quad \downarrow \quad \downarrow \\ a+td \quad a+td \quad a+td \\ \downarrow \quad \downarrow \quad \downarrow \\ b \quad bq \quad bq \end{array}} \right\} \Rightarrow \frac{b+td}{b+td} = \frac{b+td}{b} \Rightarrow \frac{b+td}{b} = \frac{b+td}{b} \Rightarrow \frac{b+td}{b} = \frac{b+td}{b}$$

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