

$$\begin{cases} -18 = \frac{a_2}{1-q} = \frac{a_1 q}{1-q} \\ 57 = \frac{a_1}{1-q} - a_2 = \frac{a_1}{1-q} - a_1 q \end{cases}$$

$$\begin{cases} a_1 q = -18(1-q) \\ 57(1-q) = a_1 - a_1 q (1-q) \end{cases}$$

$$\begin{cases} a_1 = \frac{-18(1-q)}{q} \\ 57 - 57q = q(1-q(1-q)) = a_1(1-q+q^2) \end{cases}$$

$$\begin{cases} a_1 = \frac{-18+18q}{q} \\ a_1 = \frac{57-57q}{1-q+q^2} \end{cases} \rightarrow \frac{-18(1-q)}{q} = \frac{57(1-q)}{1-q+q^2} \quad /:(1-q)$$

$$\begin{aligned} \frac{-18}{q} &= \frac{57}{1-q+q^2} \\ -18+18q-18q^2 &= 57+q \\ 18q^2-39q+18 &= 0 \\ q &= \frac{39 \pm \sqrt{39^2-4 \cdot 18 \cdot 18}}{2 \cdot 18} \\ q_1 &= \frac{1}{2} \quad q_2 = -\frac{2}{3} \\ -1 < q < 1 & \quad \downarrow \\ a_1 &= 45 \end{aligned}$$

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סכום ד האקוים הוא 1000 - (חלקו כמו סכום סדרה הנדסית) וקו"ה

$$S_n = \frac{a_1(q^n-1)}{q-1} \quad a_1$$

סכום ה סדרה הוא

$$T = \frac{a_1(q^n-1)}{q-1}$$

$$S = \frac{a_1}{1-q}$$

$$T = -S(q^n-1) \quad /:S$$

$$\frac{T}{-S} = q^n - 1$$

$$q^n = \frac{T}{-S} + 1 = \frac{-T+S}{S} \Rightarrow q = \sqrt[n]{\frac{-T+S}{S}}$$

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$$0.5742 + 0.00005742 + \dots$$

$$S = \frac{a_1}{1-q} = \frac{0.5742}{1-0.0001} = \frac{5742}{9999} = \frac{58}{101}$$

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$$0.50 + 0.0075 + 0.000075 + \dots$$

$$0.5 + \frac{0.0075}{1-0.01} = \frac{1}{2} + \frac{75}{10000} = \frac{1}{2} + \frac{7500}{990000} = \frac{1}{2} + \frac{75}{9900} = \frac{67}{132}$$

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$$0.11 + 0.0099 + 0.000099 + \dots$$

$$\frac{11}{100} + \frac{10000}{1-0.01} = \frac{11}{100} + \frac{10000}{99} = \frac{11}{100} + \frac{1}{100} = \frac{12}{100} = 0.12$$