

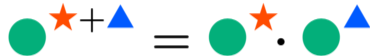
$$\lim_{n \rightarrow \infty} \frac{3^{n-1} - 4^{n+1}}{2^{2n+3} + 3^{n+2}}$$

分子・分母を 4^n で割る

$$= \lim_{n \rightarrow \infty} \frac{\frac{3^{n-1}}{4^n} - \frac{4^{n+1}}{4^n}}{\frac{2^{2n+3}}{4^n} + \frac{3^{n+2}}{4^n}}$$

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$$= \lim_{n \rightarrow \infty} \frac{\frac{3^{n-1}}{4^n} - \frac{4^{n+1}}{4^n}}{\frac{2^{2n+3}}{4^n} + \frac{3^{n+2}}{4^n}}$$



$$= \lim_{n \rightarrow \infty} \frac{\frac{3^n \cdot 3^{-1}}{4^n} - \frac{4^n \cdot 4^1}{4^n}}{\frac{2^{2n} \cdot 2^3}{4^n} + \frac{3^n \cdot 3^2}{4^n}}$$

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$$\begin{aligned} &= \lim_{n \rightarrow \infty} \frac{\frac{3^n \cdot 3^{-1}}{4^n} - \frac{\cancel{4^n} \cdot 4}{\cancel{4^n}}}{\frac{2^{2n} \cdot 2^3}{4^n} + \frac{3^n \cdot 3^2}{4^n}} \\ &= \lim_{n \rightarrow \infty} \frac{\frac{3^n}{4^n} \cdot 3^{-1} - 4}{\frac{2^{2n}}{4^n} \cdot 2^3 + \frac{3^n}{4^n} \cdot 3^2} \end{aligned}$$

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$$= \lim_{n \rightarrow \infty} \frac{\frac{3^n}{4^n} \cdot 3^{-1} - 4}{\frac{2^{2n}}{4^n} \cdot 2^3 + \frac{3^n}{4^n} \cdot 3^2}$$

$$\bullet^{\star} \times \blacktriangle = (\bullet^{\star})^{\blacktriangle}$$

$$= \lim_{n \rightarrow \infty} \frac{\left(\frac{3}{4}\right)^n \cdot \frac{1}{3} - 4}{\cancel{4^n} \cdot 8 + \left(\frac{3}{4}\right)^n \cdot 9}$$

$$\bullet^{-\star} = \frac{1}{\bullet^{\star}}$$

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$$= \lim_{n \rightarrow \infty} \frac{\left(\frac{3}{4}\right)^n \cdot \frac{1}{3} - 4}{\frac{4^n}{4^n} \cdot 8 + \left(\frac{3}{4}\right)^n \cdot 9}$$

$$= \lim_{n \rightarrow \infty} \frac{\left(\frac{3}{4}\right)^n \cdot \frac{1}{3} - 4}{8 + \left(\frac{3}{4}\right)^n \cdot 9}$$

$$\begin{aligned} &= \lim_{n \rightarrow \infty} \frac{\left(\frac{3}{4}\right)^n \cdot \frac{1}{3} - 4}{8 + \left(\frac{3}{4}\right)^n \cdot 9} \\ &= \frac{0 \cdot \frac{1}{3} - 4}{8 + 0 \cdot 9} = \frac{-4}{8} = \frac{-1}{2} \quad \boxed{\text{答}} \end{aligned}$$