

$$\begin{aligned}
7. \quad 0.0\overline{101} &= \left(\frac{1}{3^2} + \frac{1}{3^4} \right) + \left(\frac{1}{3^5} + \frac{1}{3^7} \right) + \dots \\
&= \frac{1}{3^2} + \frac{1}{3^4} + \dots \\
&= \frac{1}{3^2} \left(1 + \frac{1}{27} + \dots \right) \\
&= \frac{1}{3^2} \cdot \frac{1}{26}
\end{aligned}$$