We have

$$\frac{1}{n} \overset{n \to \infty}{\longrightarrow} 0.$$

We also know, that

$$\begin{aligned} M &= \sum_{k=0}^{\infty} q^k = 1 + q + q^2 + q^3 + q^4 + \ldots \\ &= 1 + q\left(1 + q + q^2 + q^3 + \ldots\right) \\ &\overset{\text{Def.}}{\underset{\text{of } M}{=}} 1 + q \cdot M \end{aligned}$$

In contrary to

$$\begin{aligned} M &= \sum_{k=0}^{\infty} q^k = 1 + q + q^2 + q^3 + q^4 + \ldots \\ &= 1 + q\left(1 + q + q^2 + q^3 + \ldots\right) \\ &\overset{\text{Def.}}{\underset{\text{of } M}{=}} 1 + q \cdot M \end{aligned}$$

Note, that the `limit` function is used and that as such it become quite unreadable if used inside subscripts, etc.:

$$\underbrace{\frac{n-1}{n^2}}_{\underset{n \to \infty}{\longrightarrow} 0} \cdot n = \frac{n-1}{n} = 1 - \frac{1}{n} \underset{n \longrightarrow \infty}{\to} 1$$

However, we can also write small fractions quite nicely, $\frac{1}{2}$, or have something like this: $\overset{\star}{2}$, $\lim\limits_{n}^{n}{}_{n}^{n}$ and $\frac{1}{2}$.