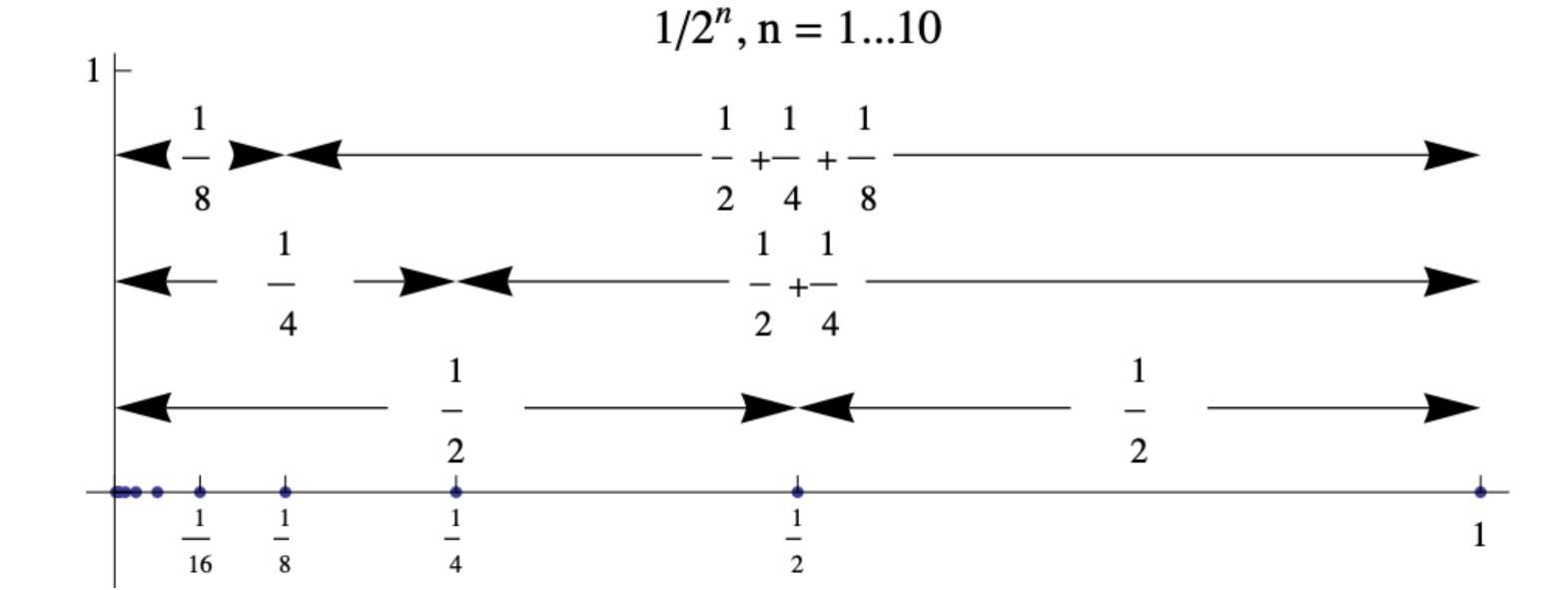


## determine convergence/divergence using limit if Sn

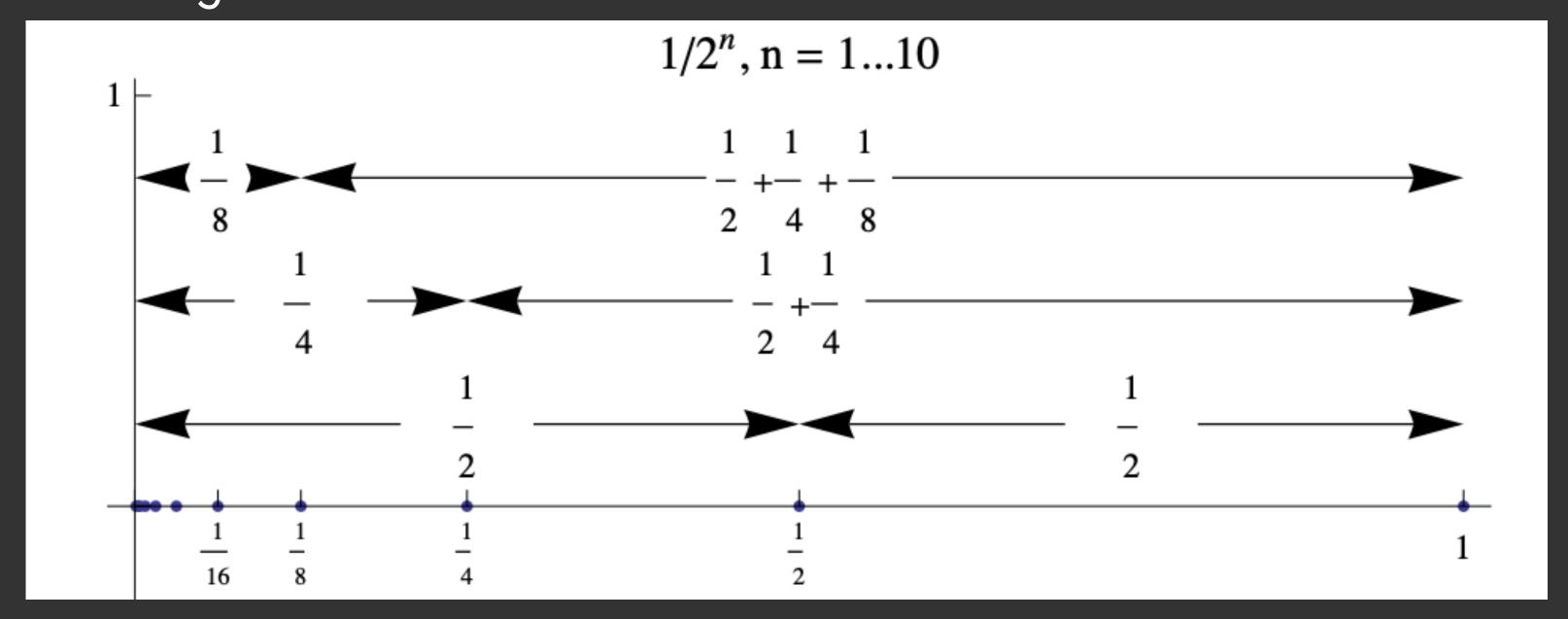




## determine convergence/divergence using limit if Sn

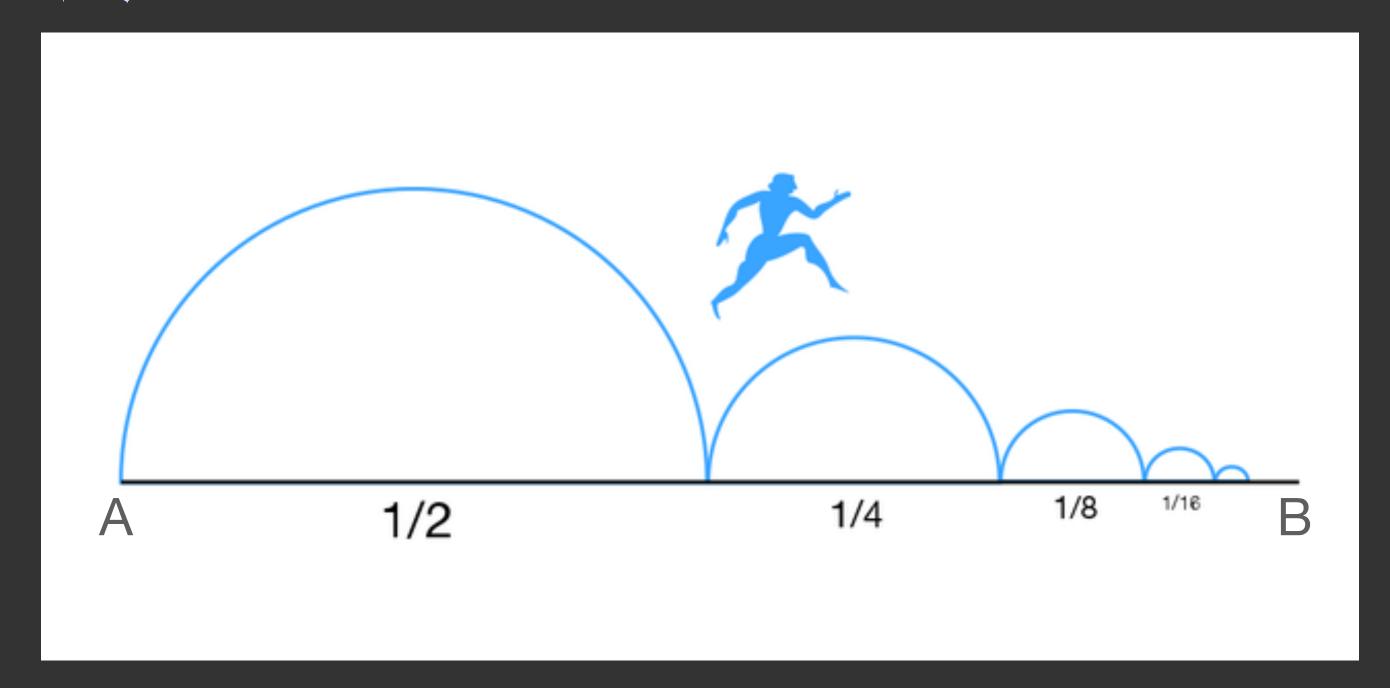
## example

Find the partial sums  $s_1, s_2, s_3, ..., s_n$  of the series  $\sum_{n=1}^{\infty} \frac{1}{2^n}$ . Find the sum of the series. Does the series converge?



$$\sum_{n=1}^{\infty} \frac{1}{2^n} = \lim_{n \to \infty} s_n = \lim_{n \to \infty} \left( 1 - \frac{1}{2^n} \right) = S = 1 \implies \text{converges}$$

## Zeno's Paradox



- Consider a runner who is to complete a course from point A to point B.
- Imagine that the runner completes half the distance from A to B, and then completes half the remaining distance, and again half the remaining distance, and so on...
- Will the runner ever reach point B?