Proof. Let $n \in \mathbb{N}$. $\neg \log_{-1} 2$ (by Archimedean Property of Natural Numbers). Then

$$\begin{aligned} n &> \log_{-1} 2 \\ &= \frac{\log 2}{\log -1} \\ &= \frac{\log 2}{\log -1} \\ &= \frac{1}{-1} \cdot \frac{\log 2}{\log 1} \\ &= -\frac{\log 2}{\log 1} \\ \Rightarrow \log 2^n &> \log 1 \\ &\Leftrightarrow 2^n > 1 \\ &\Leftrightarrow 2^n > 0 \end{aligned}$$

Which proves the positive case of our absolute value definition of the limit. Note that the inequality is true possible for natural numbers n. ∎