Question about Calculus (Limit)….!

Q: Show that: $\lim_{x\to\pm\infty}\left(1+\frac{1}{x}\right)^{x}=e$ as 'x' approaches Infinity while taking on positive or negative real values.

Sol: For Case: $x\to-\infty$

$$Put\ x=-(t+1)\ so\ that\ t\to\infty\ as\ x\to-\infty$$

My Problem:

My Problem in this Question is that, why we put $x=-(t+1)$ ….?

Also:

Why we don't put $x=-t$ here..?

Note:

Please tell me with reason…!

Please tell me as soon as possible…!

Thanks a lot for this…!