

**Theorem (2.3.24).** *Let  $f$  be the function  $f : \mathbb{R} \Rightarrow \mathbb{R}$  defined by  $f(x) = e^x$ .  $f(x)$  is not invertible.*

*Proof.* The inverse function of  $f(x) = e^x$  is  $f(x)^{-1} = \log_e x$ . But logarithmic functions are undefined for negative-valued domains. Thus,  $f(x)$  is not bijective, and  $f(x)$  is not invertible. ■