Q6 Condition Number of e^x

1. What is the approximate condition number for evaluating function $f(x) = e^x$?

   The condition number of a function is approximated by: $\text{cond} \cong |\frac{xf'(x)}{f(x)}|$

   For $f(x) = e^x$, $f'(x) = e^x$

   $$\text{cond} \cong \left|\frac{x \cdot e^x}{e^x}\right| = |x|$$

2. How large is $f(x)$ when the approximate condition number is 10^8 ?

   $$|x| = 10^8$$
   $$x = \pm 10^8$$

   $$f(x) = e^x = e^{\pm 10^8}$$