2. [8 points] Throughout this problem, let $K(x) = e^x - ex$. In case it is helpful, $e \approx 2.7$.

a. [1 point] Find a formula for $K'(x)$.

**Answer:** $K'(x) =$

b. [4 points] Find the $x$-coordinate of all global minimum(s) and global maximum(s) of $K(x)$ on the interval $[0, 3]$. If there are none of a particular type, write NONE. Use calculus to find your answers, and make sure that you show enough evidence to justify your conclusions.

**Answer:** Global min(s) at $x =$

**Answer:** Global max(es) at $x =$

c. [2 points] Find the linear approximation $L(x)$ of the function $K(x)$ at the point $x = 0$.

**Answer:** $L(x) =$

d. [1 point] If you were to use the linear approximation that you found in part c. to estimate $K(0.1)$, would the approximation give you an underestimate or overestimate of the true value of $K(0.1)$? Circle the correct answer, or circle NEI if there is not enough information to decide.

UNDERESTIMATE OVERESTIMATE NEI