13. $f(x) = \frac{\ln x}{x}$ $\begin{matrix} \nearrow P \\ \searrow Q \end{matrix}$

① $P' = \frac{1}{x}$ $\quad Q' = 1$

$$\frac{P'Q - PQ'}{Q^2}$$

$$f'(x) = \frac{\frac{1}{x}(x) - \ln x\,(1)}{x^2}$$

$$= \boxed{\frac{1 - \ln x}{x^2}}$$

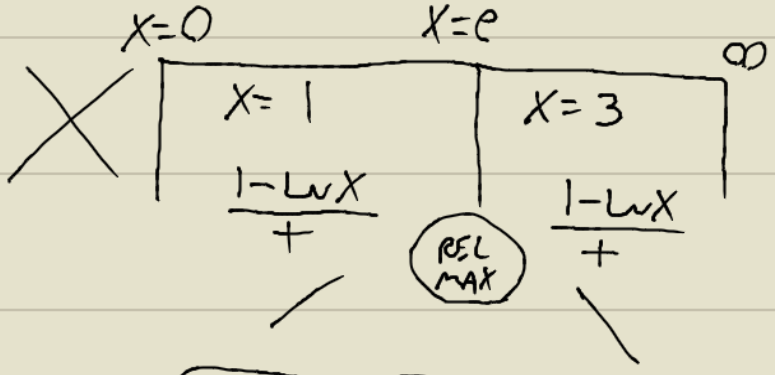
② $1 - \ln x = 0$ $\quad x^2 = 0$

$1 = \ln x$ $\quad \boxed{x = 0}$

$e^1 = x$

$\boxed{x = e}$

③



INC $(0, e)$
DEC (e, ∞)

④ REL MAX : $x = e$

$y = \frac{\ln x}{x}$

$y = \frac{\ln e^1}{e}$

$= \frac{1}{e}$

REL MAX : $\left(e, \frac{1}{e}\right)$