

テーマ：

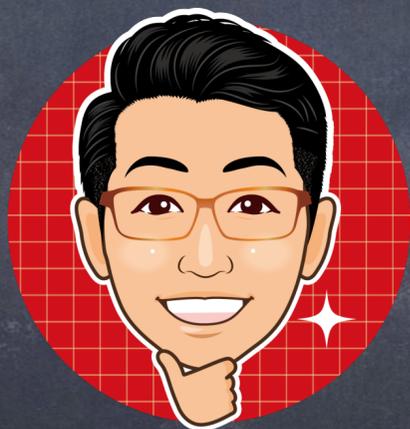
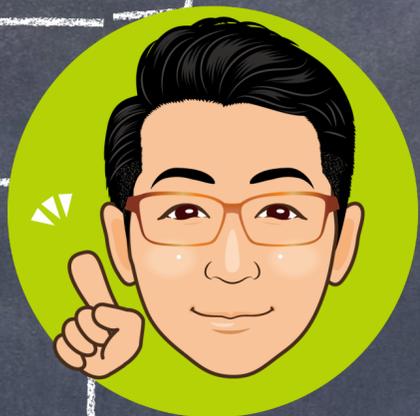
方程式の実数解の個数



(ex) $\frac{e^x}{x} = a$, 実数解の個数

<方針>

$y = \frac{e^x}{x}$ と $y = a$ の交点



x	...	0	...	1	...
$f'(x)$	-	/	-	0	+
$f(x)$	↘	/	↘	e	↗

$\lim_{x \rightarrow +\infty} \frac{e^x}{x} = \infty$, $\lim_{x \rightarrow -\infty} \frac{e^x}{x} = 0$

$\lim_{x \rightarrow +0} \frac{e^x}{x} = \lim_{x \rightarrow +0} \frac{1}{x} \cdot e^x = \infty$

$\lim_{x \rightarrow -0} \frac{e^x}{x} = \lim_{x \rightarrow -0} \frac{1}{x} \cdot e^x = -\infty$

$f(x) = \frac{e^x}{x}$ と $x=1$

$f'(x) = \frac{e^x \cdot x - e^x}{x^2} = \frac{e^x(x-1)}{x^2}$

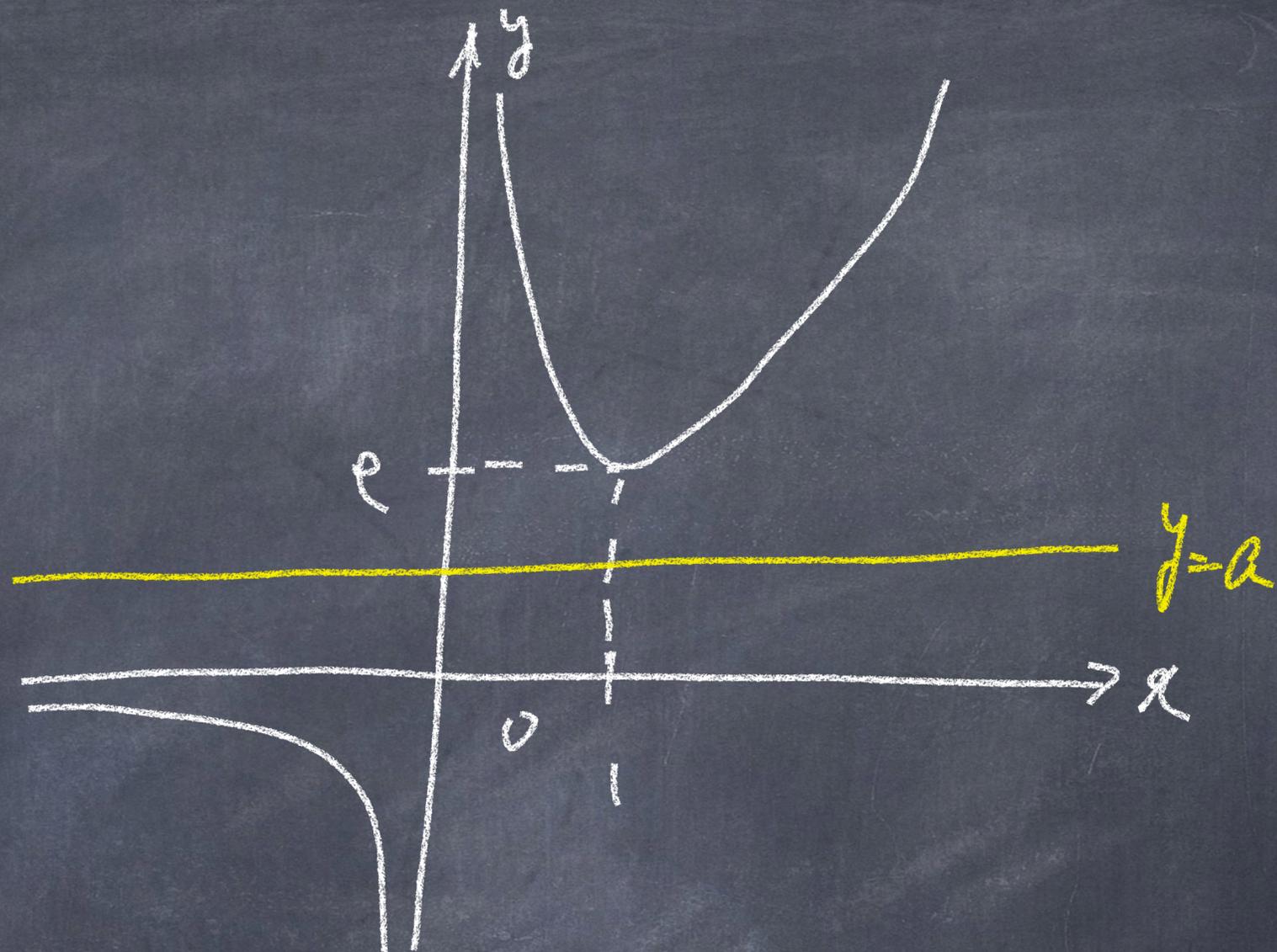
x	...	0	...	1	...
$f'(x)$	-	/	-	0	+
$f(x)$	↘	/	↘	e	↗



$$\lim_{x \rightarrow +\infty} \frac{e^x}{x} = \infty, \quad \lim_{x \rightarrow -\infty} \frac{e^x}{x} = 0$$

$$\lim_{x \rightarrow +0} \frac{e^x}{x} = \lim_{x \rightarrow +0} \frac{1}{x} \cdot e^x = \infty$$

$$\lim_{x \rightarrow -0} \frac{e^x}{x} = \lim_{x \rightarrow -0} \frac{1}{x} \cdot e^x = -\infty$$



$a > e$ $x \geq 2$ 2個

$a = e$, $a < 0$ $x \geq 2$ 1個

$0 \leq a < e$ $x \geq 2$ 0個