

(4)

$$y' = (e^{-x} \sin x)' = e^{-x}(\cos x - \sin x)$$

$e^{-x}(\cos x - \sin x) = 0 (0 \leq x \leq 2\pi)$ を解くと

$$x = \frac{\pi}{4}, \frac{5\pi}{4}$$

増減表を書くと次のようになる .

x	0	...	$\frac{\pi}{4}$	...	$\frac{5\pi}{4}$	...	2π
y'	+	+	0	−	0	+	+
y	0	$\nearrow$	$\frac{1}{\sqrt{2}e^{\pi/4}}$	$\searrow$	$-\frac{1}{\sqrt{2}e^{5\pi/4}}$	$\nearrow$	0

増減表より，極大値 $\frac{1}{\sqrt{2}e^{\pi/4}} (x = \frac{\pi}{4})$

極小値 $-\frac{1}{\sqrt{2}e^{5\pi/4}} (x = \frac{5\pi}{4})$

