

$$f_y(y) = e^{-y}$$

$$x = \ln Y$$

$$y = e^x.$$

$$\left| \frac{dy}{dx} \right| = e^x.$$

$$f_y(y) = e^{-e^x}$$

$$= e^x \cdot e^{-e^x}$$

$$e^{x-e^x}, x \in \mathbb{R}$$