

[1]

$$(a) f(z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{z^2}{2}} \#$$

$$(b) \mu - \sigma = -1, \mu + \sigma = 1$$

$$p(-1 \leq z \leq 1) \approx 68\% \#$$

$$(c) 1.96 \#$$

$$(d) f\left(\frac{1}{\sqrt{2}}\right) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}} \frac{1}{\sqrt{2}} \#$$

$$(e) 1 \#$$

$$(f) \sqrt{2} \#$$

$$(g) 0.5 \#$$

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[2]

$$(a) f(t) = 1 \cdot e^{-t} = e^{-t} \#$$

$$(b) E[T] = \frac{1}{1} = 1 \#$$

$$(c) \text{std}[T] = \sqrt{\sigma^2} = \sqrt{\frac{1}{1^2}} = 1 \#$$

$$(d) P(T > 1) = e^{-1} \approx 0.3679 \#$$

$$(e) \Gamma(1) = 1, \alpha = 3, \beta = 1, \Gamma(2) = 1! = 1, \Gamma(3) = 2! = 2$$

$$f(t) = \frac{1}{2} t^2 e^{-t}$$

$$(f) E[T_3] = 3 \times 1 = 3 \#$$

$$(g) \text{std}[T_3] = \sqrt{3 \times 1^2} = \sqrt{3} \#$$

$$(h) P(T_3 > 3) = \frac{1}{2} \cdot 9 \cdot e^{-3} \approx 0.224 \#$$

$$(i) P(T_3 > 7) = \frac{1}{2} \cdot 49 \cdot e^{-7} \approx 0.0223 \#, \text{極小, 可接受}$$