(1.)

余淳睿

(a.) $f_{\frac{1}{2}}(x) = \begin{cases} \frac{1}{\sqrt{2\pi}} e^{-\frac{x}{2}} & x > 0 \\ 0, & \text{else where} \end{cases}$

(b.) $0.68 > b$

(c.) 1.96

(d.) $f_Q(Q) \frac{1}{2^{\frac{1}{2}}\Gamma(\frac{1}{2})} x^{-\frac{1}{2}} e^{-\frac{x}{2}}$

(E.) $E[Q] = 1$

(f.) $\text{Std}[Q] = 2$

(H.) $P(Q < 1) = 1 - \int_1^{\infty} \frac{1}{\sqrt{2\pi}} x^{-\frac{1}{2}} e^{-\frac{x}{2}} = \frac{1}{\sqrt{2\pi}} = 0.758$

(2.)

(a.) $f_t(T) = e^{-x}$

(b.) $E[T] = 1$

(C.) $\text{Std}[1] = 1$

(D.) $P(T > 1) = \frac{1}{e} = 0.3679$

(E.) $\frac{e^{-\frac{x}{3}}}{\Gamma(1) 3} = \frac{e^{-\frac{x}{3}}}{3}$

(f.) $E(x) = 3$

(g.) $\text{Std}(x) = 3$

(H.) $P(T_3 > 3) = \frac{e^{-1}}{\Gamma(1) \times 3} = \frac{e^{-1}}{3}$

(i.) $\frac{e^{-\frac{7}{3}}}{3} = \frac{32}{1000}$

$= 0.032 \cdots$

$\doteq 3\%$

假設 $P(T_3 > 7)$ 的机率

為 3%，机率太小，故

接受。