

B0729059 賴佳瑋

1)

$$a) f_Z(z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2\sigma^2}(z-\mu)^2} = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2}$$

$$b) P(-1 \leq Z \leq 1) = 0.6827$$

$$c) X = 1.96$$

$$d) f_Q(q) = \frac{1}{\sqrt{2\pi}} e^{-\frac{q^2}{2}}$$

$$e) 1$$

$$f) \sqrt{2}$$

$$g) P(Q \leq 1) = 0.6827$$

$$[2] a) f_T(t) = \begin{cases} e^{-t}, & t > 0 \quad (\alpha=1, \beta=1) \\ 0, & t \leq 0 \end{cases}$$

$$b) E[T] = \beta = 1 \quad c) \text{std}[T] = \sqrt{\beta^2} = \beta = 1$$

$$d) P(T > 1) = 0.3679$$

$$g) \text{std}[T_3] = \sqrt{\beta^2} = \sqrt{3}$$

$$h) P(T_3 > 3) = 0.4232$$

$$i) P(T_3 > 7) = 0.0296$$

$$e) \alpha=3, \beta=1$$

$$f_T(t) = \frac{1}{\Gamma(3)} t^{3-1} e^{-\frac{t}{\beta}} = \frac{1}{2} t^2 e^{-t}$$

$$f_T(t) = \begin{cases} \frac{1}{2} t^2 e^{-t} & t > 0 \\ 0 & t \leq 0 \end{cases}$$

$$f) E[T_3] = \alpha\beta = 3 \times 1 = 3$$

使用3個超過1年的概率
為 2.96%, 很小;
因此可以接受.