



[Spm 2004 Mathematics T Answer](#)

10  $f(x) = \begin{cases} \frac{1}{9} x e^{-x/3}, & x \geq 0 \\ 0, & x < 0 \end{cases}$

a  $\frac{1}{9}$   
 For  $x < 0$ :  $F(x) = P(X \leq x) = 0$

For  $0 \leq x$   
 $F(x) = P(X \leq x) = \int_{-\infty}^x f(x) dx = \int_0^x \frac{1}{9} x e^{-x/3} dx$   
 $= \left[ \frac{1}{9} x \left( \frac{e^{-x/3}}{-1/3} \right) - \int_0^x \left( \frac{e^{-x/3}}{-1/3} \right) \left( \frac{1}{9} \right) dx \right]$   
 $= \left[ -\frac{1}{3} x e^{-x/3} \right]_0^x + \frac{1}{3} \int_0^x e^{-x/3} dx$   
 $= \left[ -\frac{1}{3} x e^{-x/3} - 0 \right] + \frac{1}{3} \left[ \frac{e^{-x/3}}{-1/3} \right]_0^x$   
 $= -\frac{1}{3} x e^{-x/3} - \left[ e^{-x/3} - e^0 \right]$   
 $= -\frac{1}{3} x e^{-x/3} - e^{-x/3} + 1$

$F(x) = \begin{cases} 0, & x < 0 \\ \frac{1}{3} x e^{-x/3} - e^{-x/3} + 1, & 0 \leq x \end{cases}$

b  $P(X > 9) = 1 - P(X \leq 9) = 1 - F(9) = 1 - \left[ \frac{1}{3}(9) e^{-9/3} - e^{-9/3} + 1 \right] = 3e^{-3} + e^{-3} = 4e^{-3} = 0.199$

11 H = hatch  
 H' = fail to hatch.  
 $P(H') = 0.01$   
 $P(H) = 0.99$   
 X = number of eggs hatch  
 $p = 0.99, n = n$   
 $X \sim B(n, p)$   
 $X \sim B(n, 0.99)$   
 $P(X = x) = {}^n C_x p^x q^{n-x} = {}^n C_x (0.99)^x (0.01)^{n-x}, x = 0, 1, 2, \dots, n$   
 $P(X = n) > 0.75$   
 ${}^n C_n (0.99)^n (0.01)^{n-n} > 0.75$   
 $(1)(0.99)^n (1) > 0.75$

11  $\log 0.99^n > \log 0.75$   
 $n \log 0.99 > \log 0.75$   
 $n(-0.004365) > (-0.12494)$   
 $\frac{n}{28} < 28.62$   
 maximum number of eggs = 28

b Y = number of eggs fail to hatch  
 $p = 0.01, n = 200$   
 $np = 2$  ( $< 5$  use poisson dist)  
 $Y \sim P_0(2)$   
 $P(Y = y) = \frac{e^{-\mu} \mu^y}{y!} = \frac{e^{-2} (2)^y}{y!}, y = 0, 1, 2, \dots$   
 $P(Y > 3) = 1 - P(Y \leq 3) = 1 - [P(Y=0) + P(Y=1) + P(Y=2) + P(Y=3)]$   
 $= 1 - \left[ \frac{e^{-2} 2^0}{0!} + \frac{e^{-2} 2^1}{1!} + \frac{e^{-2} 2^2}{2!} + \frac{e^{-2} 2^3}{3!} \right]$   
 $= 1 - e^{-2} \left[ \frac{2^0}{0!} + \frac{2^1}{1!} + \frac{2^2}{2!} + \frac{2^3}{3!} \right]$   
 $= 1 - \frac{19}{3} e^{-2} = 0.1429$

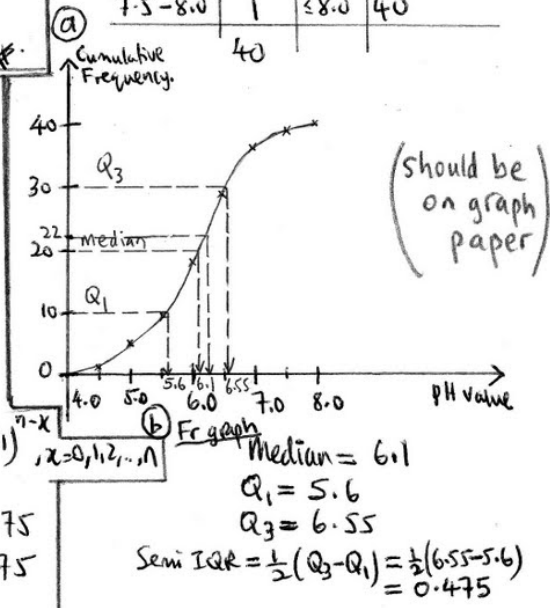
12 c Median is NOT affected  
 $Q_1$  is affected, so SIQR is affected.  
 $5.5 < \text{median } 6.1$   
 $Q_1 = 5.5$  now  $5.0 \leq 5.6$  so  $Q_1$  affected.  
 $SIQR = \frac{1}{2}(6.55 - 5.5) = 0.525$  ( $\neq 0.475$ )  
 So SIQR is affected.

d  $pH > 7$  has  $3 + 1 + 4 = 8$  samples  
 $\% = \frac{8}{44} \times 100\% = 18.18\%$

ii median = 6.25  
 Same curve is used because the samples pH value are greater than 8.0 and the earlier cumulative value are NOT affected.

15.12.2010

pH Value	No. of Samples	UCB	Cumulative Freq
4.0-4.5	1	$\leq 4.0$	0
4.5-5.0	3	$\leq 5.0$	4
5.0-5.5	5	$\leq 5.5$	9
5.5-6.0	9	$\leq 6.0$	18
6.0-6.5	11	$\leq 6.5$	29
6.5-7.0	7	$\leq 7.0$	36
7.0-7.5	3	$\leq 7.5$	39
7.5-8.0	1	$\leq 8.0$	40



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X JUNE 2004 3 Find the gradient of the curve with equation  $2x - 4xy + 33^* = 3$ , at the ... to the curve at the point (2, 1), giving your answer in the form  $ax + by + c = 0$ . ... JUNE 2011/2 5 The parametric equations of a curve are  $x = \ln(\tan t)$ ,  $y = \sin t$ , ...

## **stpm 2010 mathematics t answer**

stpm 2010 mathematics t answer, stpm 2009 mathematics t answer, stpm mathematics t question+answer, stpm mathematics t 2013 answer, stpm 2005 mathematics t answer, pelangi stpm mathematics t answer

## **stpm mathematics t question+answer**

## **stpm 2005 mathematics t answer**

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