Lab8

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1

if X exp(1) then $W = scale * (X^{\frac{1}{shape}})$ weib(scale,shape)
Proof: $P(W \leq x) = P(scale * (X^{\frac{1}{shape}}) \leq x)$
$= P(X \leq (\frac{x}{scale})^(shape))$
$= 1 - e^{-(\frac{x}{\lambda})^k}$
The CDF of weibull distribution is for $x \geq 0$ and 0 for $x \leq 0$

The probability that $D_i \geq 1$ is 99.6%

As we are checking for rainfall below 5 centimeters,the probability that the total rain is less than 5 cm is less than 99.6 percent

n	probability(simple)	probability(strat)	confidence interval(simple)	confidence interval(strat)
100	0.4	0.300	[0.2357,0.4842]	[0.3892,0.3962]
10000	0.3703	0.375	[0.3586,0.3835]	[0.3782,0.3783]

2

$X = (X_1, X_2...., X_{18}, X_{20}, ...)$

$h(y_{19}) = E(f(X,Y)|Y = y_{19}) = \prod_{j=1,j\neq 19}^{38} G_{\alpha_j}(y_19)$
Since
X=max$(X_1, X_2, X_3, ...)$ has a CDF of $F_1F_2F_3$... from the question in the exam as X_{19} is largest implies Y_{19} is the largest we can use the above formula

calculated myu=0.6065

3

$(\mu_i, \sigma_i^2) = (0, \sqrt{2ln(i)})$

The expectation of log-normal distribution is $exp(\mu + \frac{\sigma^2}{2})$
Since $x_i are independent$ $E(h(x)) = \frac{1}{5}\prod_{i=1}^{5} E(x_i) = \frac{1}{5}\prod_{i=1}^{5} i) = 24$

computed $\mu = 3.1182$