12.有 30 種連續型機率分配與 6 個間斷型機率分配模擬器，

1)Uniform distribution,
$X \sim U(\alpha,\beta)$
$$f_X(x)=\frac{1}{\beta-\alpha},\alpha\le x\le\beta,-\infty<\alpha<\beta<\infty,$$

2) Normal distribution,
$X \sim N(\mu,\sigma^2)$
$$f_X(x)=\frac{1}{\sqrt{2\pi}\sigma}\exp\left(-\frac{(x-\mu)^2}{2\times\sigma^2}\right),-\infty<x<\infty$$
$$-\infty<\mu<\infty,\sigma>0,$$

3)Shifted exponential distribution,
$X \sim Shifted\_exponential(\lambda,c)$
$$f_X(x)=\lambda\exp(-\lambda(x-c)),c<x<\infty$$
$$-\infty<c<\infty,\lambda>0,$$

4)Pareto1 distribution,
$X \sim Pareto1(\lambda,c)$
$$f_X(x)=\lambda\times\frac{x^{\lambda-1}}{c^{\lambda}},0<x<c,\lambda>0,c>0,$$

5)Pareto2 distribution,
$X \sim Pareto2(\lambda,c)$
$$f_X(x)=\lambda\frac{c^{\lambda}}{x^{\lambda+1}},c<x<\infty,\lambda>0,c>0,$$

6)Rayleigh distribution,
$X \sim Rayleigh(\lambda,c)$
$$f_X(x)=2\lambda\times(x-c)\times\exp(-\lambda(x-c)^2),c<x<\infty$$
$$\lambda>0,c>0,$$

7)Double exponential distribution,
$X \sim DE(\lambda,\mu)$
$$f_X(x)=\frac{\lambda}{2}\exp(-\lambda|x-\mu|),-\infty<x<\infty$$
$$-\infty<\mu<\infty,\lambda>0,$$

8)Lognormal distribution
$X \sim Log\_normal(\mu,\sigma^2)$
$$f_X(x)=\frac{1}{\sqrt{2\pi}\sigma x}\exp\left(-\frac{(\ln(x)-\mu)^2}{2\sigma^2}\right),0<x<\infty,$$
$$-\infty<\mu<\infty,\sigma>0,$$

9)Gamma distribution
$X \sim Gamma(\alpha,\beta)$
$$f_X(x)=\frac{x^{\alpha-1}}{\Gamma(\alpha)\beta^{\alpha}}\exp\left(-\frac{x}{\beta}\right),0<x<\infty,\alpha,\beta>0,$$
$$\Gamma(\ ):gamma\quad function,$$

10)Beta distribution
$X \sim Beta(\alpha,\beta)$
$$f_X(x)=\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}x^{\alpha-1}(1-x)^{\beta-1},0<x<1$$
$$\alpha,\beta>0,\Gamma(\ ):gamma\quad function,$$

11)Cauchy distribution
$X \sim Cauchy(\mu,\sigma)$
$$f_X(x)=\frac{1}{\pi}\times\frac{\sigma}{(x-\mu)^2+\sigma^2},-\infty<x<\infty,$$
$$\sigma>0,-\infty<\mu<\infty,$$

12)Arcsin distribution
$X \sim Arc\sin(\mu,c)$
$$f(x)=\frac{1}{\pi}\frac{1}{\sqrt{1-\frac{(x-\mu)^2}{c^2}}},|x-\mu|<c,$$
$$-\infty<\mu<\infty,c>0,$$

13)Gumble distribution

$X \sim Gumbel(\mu,\sigma)$

$$f_X(x)=\frac{1}{\sigma}e^{-\frac{x-\mu}{\sigma}}e^{-\left(e^{-\frac{x-\mu}{\sigma}}\right)},-\infty<x<\infty,$$

$$-\infty<\mu<\infty,\sigma>0,$$

14) Triangular 1 distribution

$X \sim Triangular1(\mu,c)$

$$f(x)=\begin{cases}\left|\left(\frac{x-\mu}{c}\right)\times\frac{1}{c}\right|,-c+\mu<x<\mu+c,\\ 0,otherwise\end{cases}$$

$$-\infty<\mu<\infty,c>0,$$

15)Trapezoid distribution

$X \sim Trapezoid(\mu,c)$

$$f_X(x)=$$

$$\begin{cases}\frac{1.5c+x-\mu}{2c^2},\mu-1.5c<x<\mu-0.5c\\ \frac{1}{2c},\mu-0.5c<x<\mu+0.5c\\ \frac{1.5c-x+\mu}{2c^2},\mu+0.5c<x<\mu+1.5c\\ 0,otherwie\end{cases},$$

$$-\infty<\mu<\infty,c>0,$$

16)U-quadratic distribution

$X \sim U\_quadratic(a,b)$

$$f_X(x)=\alpha(x-\beta)^2,a\le x\le b,-\infty<a<b<\infty,$$

$$\beta=\frac{a+b}{2},\alpha=\frac{12}{(b-a)^3},$$

17) Wingner semicircle distribution

$X \sim Semi\_circle(\mu,R)$

$$f_X(x)=\frac{2}{\pi R^2}\sqrt{R^2-(x-\mu)^2},|x-\mu|\le R,$$

$$-\infty<\mu<\infty,R>0,$$

18) Logisitic distribution

$X \sim Logistic(\mu,\sigma)$

$$f_X(x)=\frac{e^{-\frac{(x-\mu)}{\sigma}}}{\left(1+e^{-\frac{(x-\mu)}{\sigma}}\right)^2}\times\frac{1}{\sigma},-\infty<x<\infty,$$

$$-\infty<\mu<\infty,\sigma>0,$$

19)Weibull distribution

$X \sim Weibull(\alpha,\beta,\gamma)$

$$f_X(x)=\gamma\times\left(\frac{x-\alpha}{\beta}\right)^{\gamma-1}\times\frac{1}{\beta}\times\exp\left(-\left(\frac{x-\alpha}{\beta}\right)^{\gamma}\right)$$

$$,x>\alpha,\alpha>0,\beta>0,\gamma>0,$$

22)Pareto3 distribution

$X \sim Pareto3(\lambda,c)$

$$f_X(x)=\lambda\left(1-\frac{x}{c}\right)^{\lambda-1}\times\frac{1}{c},0<x<c$$

$$\lambda>0,c>0$$

23)Triangular2 distribution

$X \sim Triangular2(a,b,c)$

$$f_X(x)=\begin{cases}\frac{2}{b-a}\times\frac{1}{c-a}\times(x-a), a\le x<c\\ \frac{2}{b-a}\times\frac{1}{b-c}\times(b-x), c\le x<b\\ 0, otherwise\end{cases}$$

$a,b,c\in R, a<c<b$

24)Triangular3 distribution

$X \sim Triangular3(a,b,c)$

$$f_X(x)=\begin{cases}\frac{2}{b-a}\times\frac{1}{c-a}\times(c-x), a\le x<c\\ \frac{2}{b-a}\times\frac{1}{b-c}\times(x-c), c\le x<b\\ 0, otherwise\end{cases}$$

$a,b,c\in R, a<c<b$

25)Log-logistic distribution

$X \sim Log\_Logistic(\alpha,\beta)$

$$f_X(x)=\frac{(\beta/\alpha)(x/\alpha)^{\beta-1}}{\left[1+(x/\alpha)^{\beta}\right]^2}, x>0,$$

$\alpha>0, \beta>0,$

26) Hyperbolic secant distribution

$X \sim Hyper\_\sec ant(\mu,\sigma)$

$$f_X(x)=\frac{1}{2}\sec h\left(\frac{\pi}{2}\times\left(\frac{x-\mu}{\sigma}\right)\right)\times\frac{1}{\sigma},$$

$-\infty<x<\infty, -\infty<\mu<\infty, \sigma>0$

27)Kumaraswamy distribution

$X \sim Kumaraswamy(a,b)$

$$f_X(x)=abx^{a-1}\left(1-x^a\right)^{b-1}, 0<x<1,$$

$a>0, b>0$

28)Raised cosine distribution

$X \sim Raised\_\cos ine(\mu,s)$

$$f_X(x)=\frac{1}{2s}\left[1+\cos\left(\frac{x-\mu}{s}\times\pi\right)\right],$$

$\mu-s\le x\le\mu+s, -\infty<\mu<\infty, s>0$

29)Gumbel distribution(Type 1)

$X \sim Gumbel(type\quad 1)(a,b)$

$$f_X(x)=ab\exp\left(-\left(be^{-ax}+ax\right)\right),$$

$-\infty<x<\infty, a>0, b>0,$

42)t distribution

$X \sim t(\upsilon=df)$

$$f_X(x)=\frac{\Gamma\left(\frac{\upsilon+1}{2}\right)}{\sqrt{\upsilon\pi}\,\Gamma\left(\frac{\upsilon}{2}\right)}\left(1+\frac{x^2}{\upsilon}\right)^{-\left(\frac{\upsilon+1}{2}\right)}, -\infty<x<\infty,$$

$\upsilon=df\in N, \Gamma(\ ): gamma\quad function,$

43)Chi-square distribution

$X \sim \chi^2(\upsilon=df)$

$$f_X(x)=\frac{x^{\upsilon/2-1}}{\Gamma\left(\frac{\upsilon}{2}\right)2^{\frac{\upsilon}{2}}}\exp\left(-\frac{x}{2}\right), x>0, \upsilon=df\in N,$$

47) F distribution

$X \sim F(df1 = \upsilon_1, df2 = \upsilon_2)$

$$f(x)\frac{\Gamma\left(\frac{df_1+df_2}{2}\right)}{\Gamma\left(\frac{df_1}{2}\right)\Gamma\left(\frac{df_2}{2}\right)}\times\left(\frac{df_1}{df_2}\right)^{\frac{df_1}{2}}$$

$$\times x^{\frac{df_1}{2}-1}\times\left(1+\frac{df_1}{df_2}x\right)^{-\frac{df_1+df_2}{2}}, x>0,$$

$\upsilon_1 = df_1 \in N, \upsilon_2 = df_2 \in N,$

$\Gamma(\ ): gamma \quad function,$

59)Bernoulli distribution

$X \sim B(1, p)$

$$f_X(x) = p^x(1-p)^{1-x}, x = 0,1,$$

$0 < p < 1$

60)Binomial distribution

$X \sim B(n, p)$

$$f_X(x) = \binom{n}{x}p^x(1-p)^{n-x}, x = 0,1,...,n,$$

$0 < p < 1, n \in N,$

61)Poison distribution

$X \sim P(\lambda)$

$$f_X(x) = \frac{e^{-\lambda}\lambda^x}{x!}, x = 0,1,2,....., \lambda > 0,$$

62)Goemetric distribution

$X \sim G(p)$

$$f_X(x) = p(1-p)^{x-1}, x = 1,2,.....,0 < p < 1,$$

63)Negative Binomial distribution

$X \sim NB(r, p)$

$$f_X(x) = \binom{r-1}{r-x}p^{r-1}(1-p)^{r-x}, x = r, r+1,.....,$$

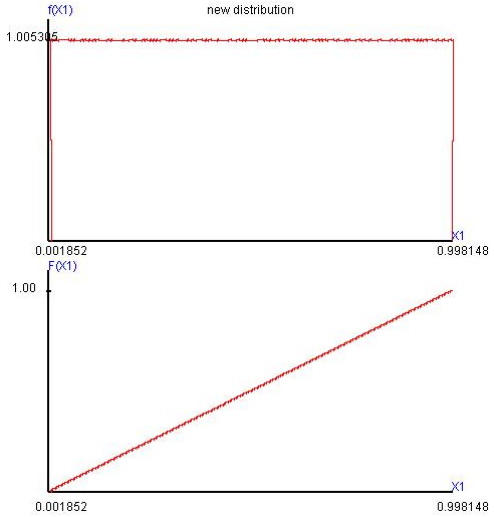
$0 < p < 1, r \in N,$

64)Discrete Uniform distribution

$$f_X(x) = \frac{1}{N}, x = 1,2,..., N$$

12.1). $X \sim Uniform(\alpha = 0, \beta = 1)$, $f_X(x) = 1, 0 \le x \le 1$, $F_X(x) = x, 0 \le x \le 1$.

pdf and df

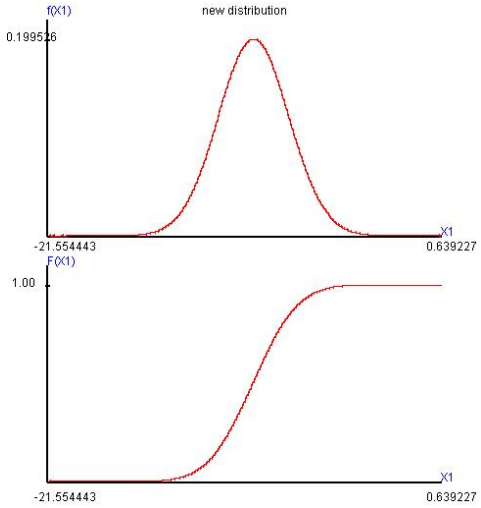


coefficient

Mathematical Mean:		0.50001
Geometrical Mean :		0.36788
Harmonic Mean	:	0.05220
Variance	:	0.08333
S.D.	:	0.28867
Skewed Coef.	:	-0.00025
Kurtosis Coef.	:	1.80005
MAD	:	0.25000
Range	:	1.00000
Mid_range	:	0.50000
Median	:	0.50007
Q1	:	0.25003
Q2	:	0.50007
Q3	:	0.74997
IQR	:	0.49994
C.V.	:	0.57733

12.2). $X \sim Normal(\mu = -10, \sigma^2 = 2^2)$,

pdf and df

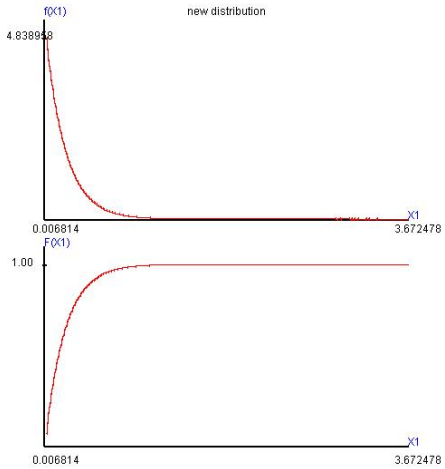


coefficient

Mathematical Mean:		-10.00020
Geometrical Mean : none		
Harmonic Mean	: none	
Variance	:	4.00017
S.D.	:	2.00004
Skewed Coef.	:	0.00005
Kurtosis Coef.	:	3.00057
MAD	:	1.59573
Range	:	22.27617
Mid_range	:	-10.45761
Median	:	-10.00027
Q1	:	-11.34920
Q2	:	-10.00027
Q3	:	-8.65139
IQR	:	2.69781
C.V.	: none	

12.3). $X \sim Sjhifte\_\exp onential(\lambda = 5, c = 0)$, $f_X(x) = 5\exp(-5x), c < x < \infty$,

pdf and df

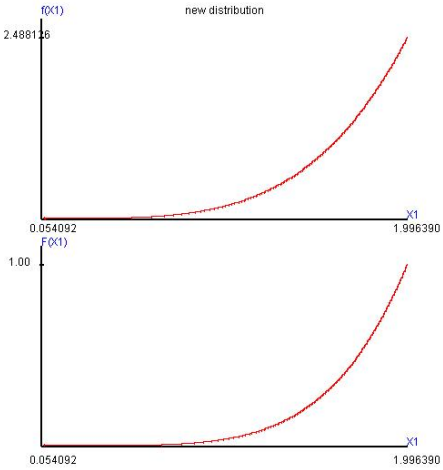


coefficient

Mathematical Mean:		0.19999
Geometrical Mean :		0.11225
Harmonic Mean	:	0.00828
Variance	:	0.04002
S.D.	:	0.20004
Skewed Coef.	:	2.00019
Kurtosis Coef.	:	8.99735
MAD	:	0.14717
Range	:	3.67929
Mid_range	:	1.83965
Median	:	0.13860
Q1	:	0.05751
Q2	:	0.13860
Q3	:	0.27725
IQR	:	0.21973
C.V.	:	1.00024

12.4). $X \sim Pareto1(\lambda = 5, c = 2)$, $f_X(x) = \frac{5 \times x^4}{32}, 0 < x < 2, F_X(x) = \frac{x^5}{32}, 0 < x < 2$

Pdf and df

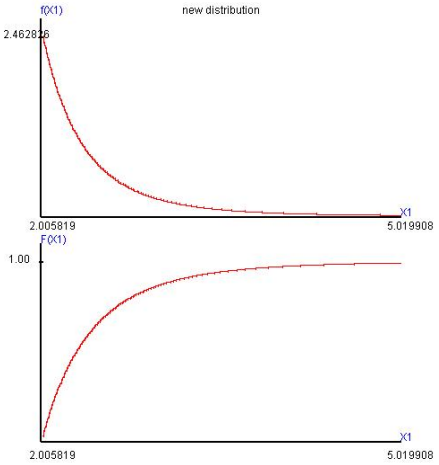


coefficient

Mathematical Mean:		1.66669
Geometrical Mean :		1.63748
Harmonic Mean	:	1.60000
Variance	:	0.07939
S.D.	:	0.28176
Skewed Coef.	:	-1.18354
Kurtosis Coef.	:	4.20080
MAD	:	0.22329
Range	:	1.94952
Mid_range	:	1.02524
Median	:	1.74115
Q1	:	1.51574
Q2	:	1.74115
Q3	:	1.88822
IQR	:	0.37248
C.V.	:	0.16905

12.5). $X \sim Pareto2(\lambda = 5, c = 2)$, $f_X(x) = 5 \times \frac{32}{x^6}, 2 < x < \infty, F_X(x) = 1 - \frac{32}{x^5}, 2 < x < \infty$

Pdf and df

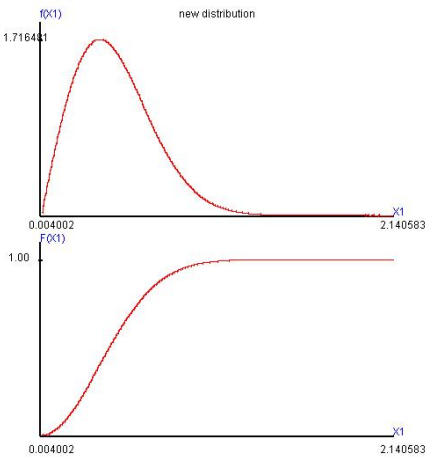


coefficient

Mathematical Mean:		2.50000
Geometrical Mean :		2.44278
Harmonic Mean	:	2.39996
Variance	:	0.41674
S.D.	:	0.64555
Skewed Coef.	:	4.59693
Kurtosis Coef.	:	62.23474
MAD	:	0.40968
Range	:	77.23665
Mid_range	:	40.61833
Median	:	2.29733
Q1	:	2.11839
Q2	:	2.29733
Q3	:	2.63898
IQR	:	0.52058
C.V.	:	0.25822

12.6). $X \sim Rayleigh(\lambda = 4, c = 0)$, $f_X(x) = 8x \exp(-4 \times x^2), 0 < x < \infty,$

Pdf and df

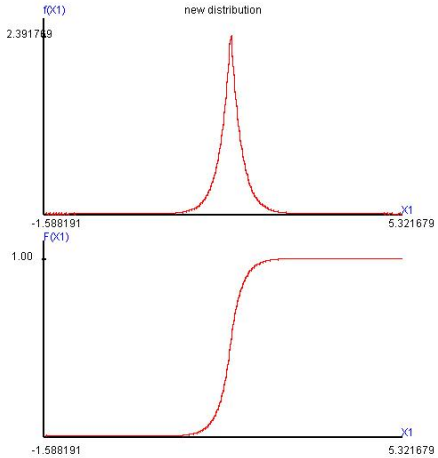


coefficient

Mathematical Mean:		0.44308
Geometrical Mean :		0.37458
Harmonic Mean	:	0.28194
Variance	:	0.05367
S.D.	:	0.23167
Skewed Coef.	:	0.63130
Kurtosis Coef.	:	3.24528
MAD	:	0.18622
Range	:	2.14452
Mid_range	:	1.07229
Median	:	0.41623
Q1	:	0.26812
Q2	:	0.41623
Q3	:	0.58869
IQR	:	0.32057
C.V.	:	0.52286

12.7). $X \sim DE(\lambda = 5, \mu = 2)$, $f_X(x) = \frac{5}{2} \times \exp(-5 \times |x-2|), -\infty < x < \infty,$

Pdf and df

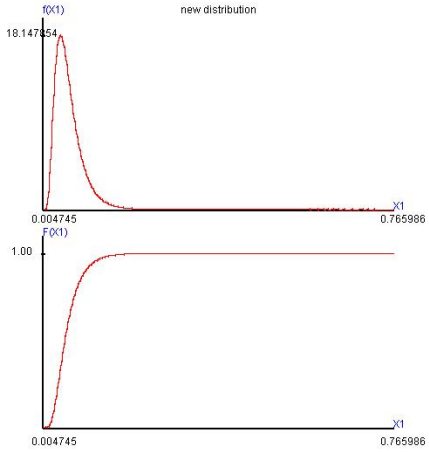


coefficient

Mathematical Mean:	2.00007
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	0.08001
S.D. :	0.28286
Skewed Coef. :	0.00050
Kurtosis Coef. :	6.00429
MAD :	0.20001
Range :	6.93556
Mid_range :	1.86674
Median :	2.00002
Q1 :	1.86142
Q2 :	2.00002
Q3 :	2.13870
IQR :	0.27728
C.V. :	0.14143

12.8). $X \sim Log\_Normal(\mu = -3, \sigma^2 = 0.5^2)$.

Pdf and df

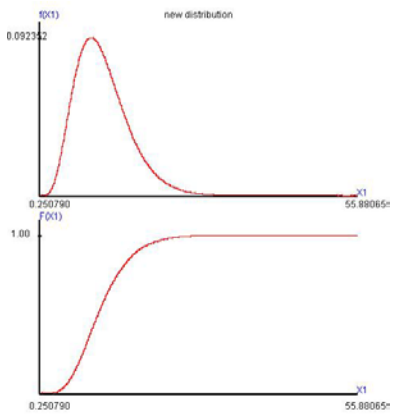


coefficient

Mathematical Mean:	0.05642
Geometrical Mean :	0.04979
Harmonic Mean :	0.04394
Variance :	0.00090
S.D. :	0.03007
Skewed Coef. :	1.75271
Kurtosis Coef. :	8.92191
MAD :	0.02227
Range :	0.76407
Mid_range :	0.38537
Median :	0.04979
Q1 :	0.03554
Q2 :	0.04979
Q3 :	0.06975
IQR :	0.03421
C.V. :	0.53303

12.9). $X \sim Gamma(\alpha = 5.5, \beta = 2)$, $f_X(x) = \frac{x^{5.5-1}}{\Gamma(5.5)2^{5.5}} \exp\left(-\frac{x}{2}\right), 0 < x < \infty$

Pdf and df

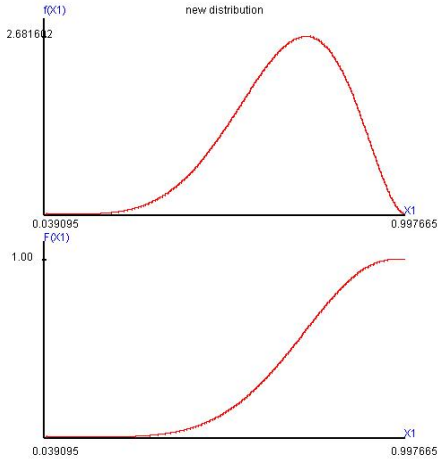


coefficient

Mathematical Mean:	11.00042
Geometrical Mean :	10.01682
Harmonic Mean :	8.99994
Variance :	22.00452
S.D. :	4.69090
Skewed Coef. :	0.85316
Kurtosis Coef. :	4.09244
MAD :	3.68634
Range :	55.83667
Mid_range :	28.06572
Median :	10.34121
Q1 :	7.58489
Q2 :	10.34121
Q3 :	13.70112
IQR :	6.11623
C.V. :	0.42643

12.10). $X \sim Beta(\alpha = 6.5, \beta = 3)$, $f_X(x) = \frac{\Gamma(9.5)}{\Gamma(6.5)\Gamma(3)} x^{6.5-1}(1-x)^{3-1}, 0 < x < 1,$

Pdf and df

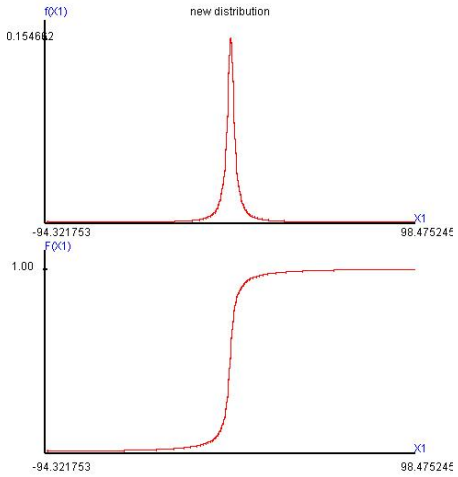


coefficient

Mathematical Mean:		0.68422
Geometrical Mean :		0.66710
Harmonic Mean	:	0.64707
Variance	:	0.02058
S.D.	:	0.14345
Skewed Coef.	:	-0.44690
Kurtosis Coef.	:	2.79566
MAD	:	0.11657
Range	:	0.96213
Mid_range	:	0.51838
Median	:	0.69762
Q1	:	0.58926
Q2	:	0.69762
Q3	:	0.79271
IQR	:	0.20345
C.V.	:	0.20965

12.11). $X \sim Cauchy(\mu = 2, \sigma = 2)$, $f_X(x) = \frac{1}{\pi} \times \frac{2}{(x-2)^2 + 4}, -\infty < x < \infty,$

Pdf and df

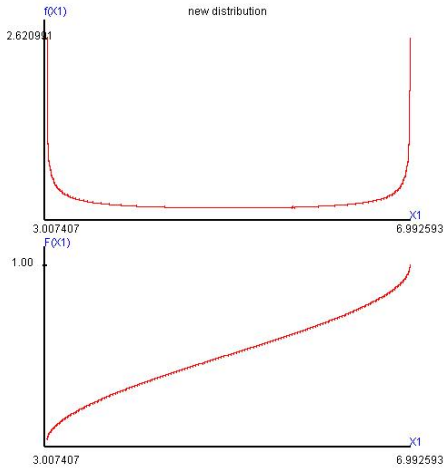


coefficient

Mathematical Mean:		1.99886
Geometrical Mean : none		
Harmonic Mean	: none	
Variance	:	506.47007
S.D.	:	22.50489
Skewed Coef.	:	0.00106
Kurtosis Coef.	:	106.02525
MAD	:	6.76683
Range	:	799.99173
Mid_range	:	1.99923
Median	:	1.99920
Q1	:	0.00901
Q2	:	1.99920
Q3	:	3.98993
IQR	:	3.98092
C.V.	:	11.25889

12.12). $X \sim Arc\sin(\mu = 5, c = 2)$,

Pdf and df

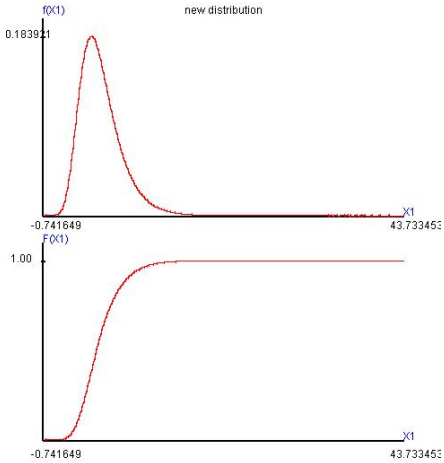


coefficient

Mathematical Mean:		5.00028
Geometrical Mean :		4.79153
Harmonic Mean	:	4.58278
Variance	:	2.00029
S.D.	:	1.41432
Skewed Coef.	:	-0.00028
Kurtosis Coef.	:	1.49992
MAD	:	1.27334
Range	:	4.00000
Mid_range	:	5.00000
Median	:	5.00045
Q1	:	3.58587
Q2	:	5.00045
Q3	:	6.41463
IQR	:	2.82877
C.V.	:	0.28285

12.13). $X \sim Gumbel(\mu = 5, \sigma = 2)$,

Pdf and df

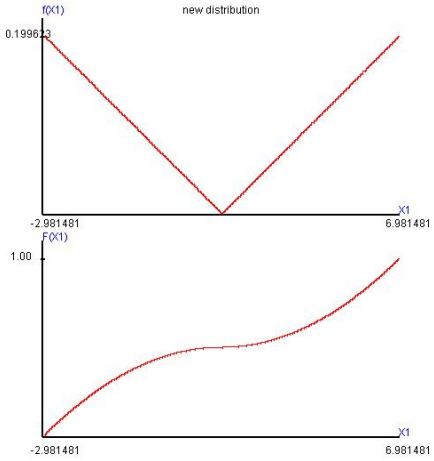


coefficient

Mathematical Mean:	6.15520
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	6.58502
S.D. :	2.56613
Skewed Coef. :	1.13992
Kurtosis Coef. :	5.39998
MAD :	1.96682
Range :	44.64044
Mid_range :	21.49590
Median :	5.73344
Q1 :	4.34684
Q2 :	5.73344
Q3 :	7.49267
IQR :	3.14584
C.V. :	0.41690

12.14). $X \sim Triangular1(\mu = 2, c = 5)$,

pdf and df

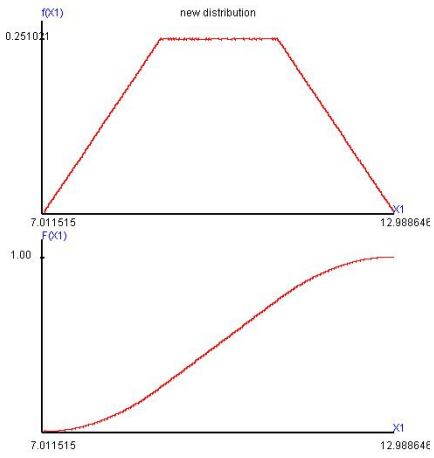


coefficient

Mathematical Mean:	2.00069
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	12.50159
S.D. :	3.53576
Skewed Coef. :	-0.00029
Kurtosis Coef. :	1.33331
MAD :	3.33355
Range :	10.00000
Mid_range :	2.00000
Median :	2.05962
Q1 :	-1.53541
Q2 :	2.05962
Q3 :	5.53620
IQR :	7.07161
C.V. :	1.76727

12.15). $X \sim Trapezoid(\mu = 10, c = 2)$,

pdf and df

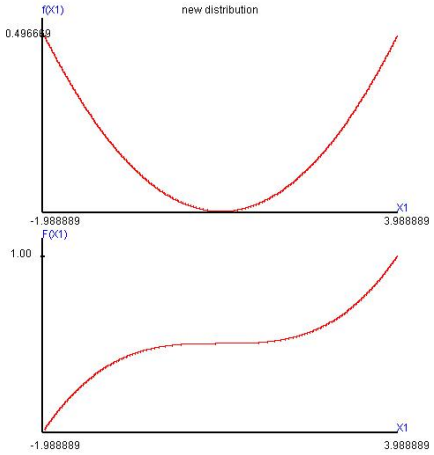


coefficient

Mathematical Mean:	10.00027
Geometrical Mean :	9.91570
Harmonic Mean :	9.83012
Variance :	1.66726
S.D. :	1.29122
Skewed Coef. :	-0.00009
Kurtosis Coef. :	2.18395
MAD :	1.08352
Range :	5.99935
Mid_range :	10.00008
Median :	10.00029
Q1 :	9.00007
Q2 :	10.00029
Q3 :	11.00038
IQR :	2.00031
C.V. :	0.12912

12.16). $X \sim U\_quadratic(a=-2, b=4)$,

pdf and df

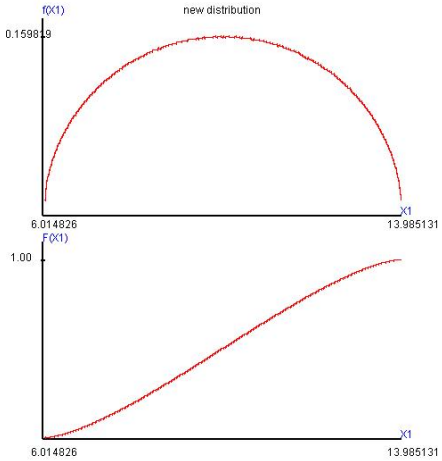


coefficient

Mathematical Mean:		1.00010
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	5.40047
S.D.	:	2.32389
Skewed Coef.	:	0.00002
Kurtosis Coef.	:	1.19045
MAD	:	2.25010
Range	:	6.00000
Mid_range	:	1.00000
Median	:	0.92991
Q1	:	-1.38118
Q2	:	0.92991
Q3	:	3.38144
IQR	:	4.76262
C.V.	:	2.32367

12.17). $X \sim Semi\_circle(\mu=10, R=4)$,

pdf and df

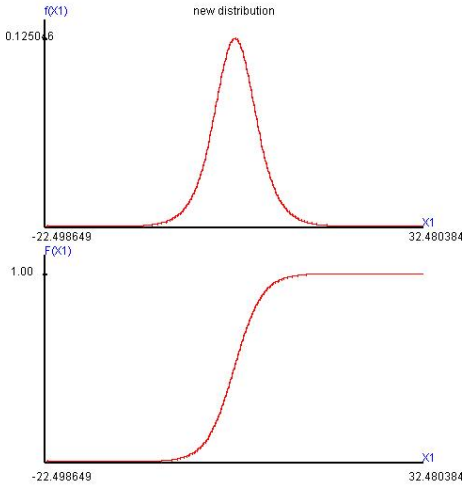


coefficient

Mathematical Mean:		9.99972
Geometrical Mean :		9.79330
Harmonic Mean	:	9.58231
Variance	:	3.99992
S.D.	:	1.99998
Skewed Coef.	:	0.00022
Kurtosis Coef.	:	2.00008
MAD	:	1.69762
Range	:	7.99993
Mid_range	:	9.99998
Median	:	9.99957
Q1	:	8.38404
Q2	:	9.99957
Q3	:	11.61550
IQR	:	3.23146
C.V.	:	0.20000

12.18). $X \sim Logistic(\mu=5, \sigma=2)$,

pdf and df

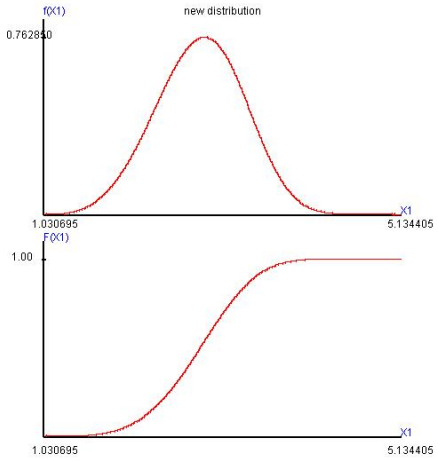


coefficient

Mathematical Mean:		5.00080
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	13.16611
S.D.	:	3.62851
Skewed Coef.	:	0.00027
Kurtosis Coef.	:	4.19166
MAD	:	2.77330
Range	:	55.18342
Mid_range	:	4.99087
Median	:	5.00057
Q1	:	2.80297
Q2	:	5.00057
Q3	:	7.19825
IQR	:	4.39528
C.V.	:	0.72559

12.19). $X \sim Weibull(\alpha=1, \beta=2, \gamma=4)$,

pdf and df

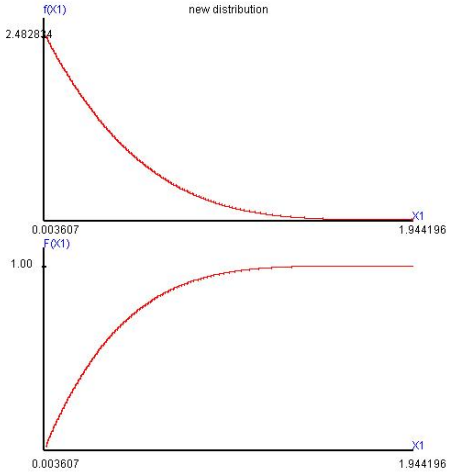


coefficient

Mathematical Mean:	2.81269
Geometrical Mean :	2.76427
Harmonic Mean :	2.71288
Variance :	0.25877
S.D. :	0.50870
Skewed Coef. :	-0.08727
Kurtosis Coef. :	2.74785
MAD :	0.41040
Range :	4.11897
Mid_range :	3.08255
Median :	2.82479
Q1 :	2.46457
Q2 :	2.82479
Q3 :	3.17014
IQR :	0.70557
C.V. :	0.18086

12.22). $X \sim Pareto3(\lambda = 5, c = 2)$,

pdf and df

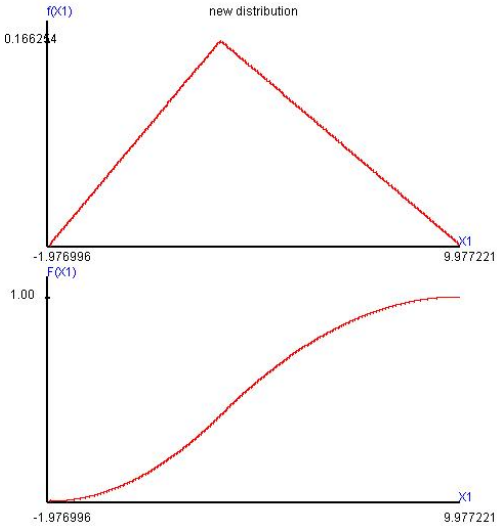


coefficient

Mathematical Mean:	0.33331
Geometrical Mean :	0.20387
Harmonic Mean :	0.02292
Variance :	0.07937
S.D. :	0.28172
Skewed Coef. :	1.18333
Kurtosis Coef. :	4.19996
MAD :	0.22327
Range :	1.94780
Mid_range :	0.97390
Median :	0.25887
Q1 :	0.11182
Q2 :	0.25887
Q3 :	0.48424
IQR :	0.37242
C.V. :	0.84522

12.23). $X \sim Triangular2(a = -2, b = 10, c = 3)$,

pdf and df

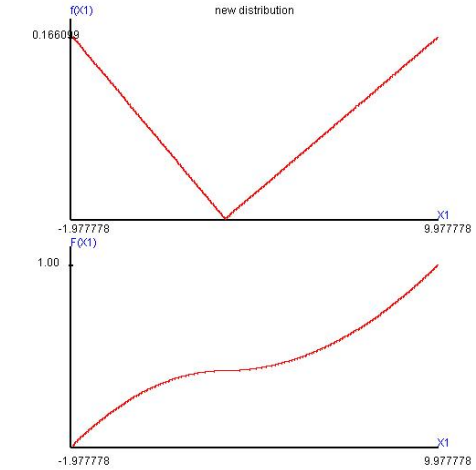


coefficient

Mathematical Mean:	3.66722
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	6.05808
S.D. :	2.46132
Skewed Coef. :	0.16051
Kurtosis Coef. :	2.39985
MAD :	2.01659
Range :	11.99866
Mid_range :	4.00011
Median :	3.51972
Q1 :	1.87312
Q2 :	3.51972
Q3 :	5.41830
IQR :	3.54518
C.V. :	0.67117

12.24). $X \sim Triangular3(a=-2, b=10, c=3)$,

pdf and df

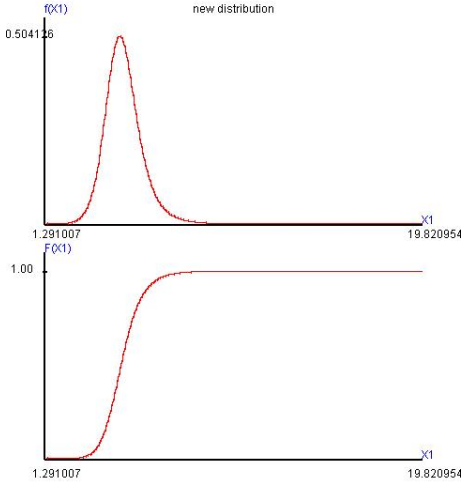


coefficient

Mathematical Mean:		4.33346
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	17.71915
S.D.	:	4.20941
Skewed Coef.	:	-0.18854
Kurtosis Coef.	:	1.38984
MAD	:	3.90717
Range	:	12.00000
Mid_range	:	4.00000
Median	:	5.64511
Q1	:	-0.16182
Q2	:	5.64511
Q3	:	8.29118
IQR	:	8.45299
C.V.	:	0.97137

12.25). $X \sim Log\_logistic(\alpha=5, \beta=10)$,

pdf and df

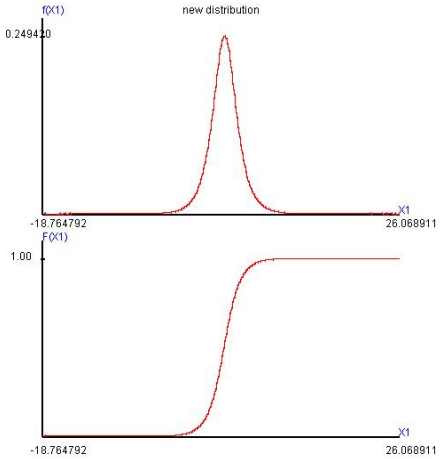


coefficient

Mathematical Mean:		5.08325
Geometrical Mean :		5.00006
Harmonic Mean	:	4.91823
Variance	:	0.88470
S.D.	:	0.94058
Skewed Coef.	:	0.93097
Kurtosis Coef.	:	6.39700
MAD	:	0.70569
Range	:	18.59883
Mid_range	:	10.55598
Median	:	5.00008
Q1	:	4.47987
Q2	:	5.00008
Q3	:	5.58063
IQR	:	1.10076
C.V.	:	0.18504

12.26). $X \sim Hyperbolic\_secant(\mu=4, \sigma=2)$,

pdf and df

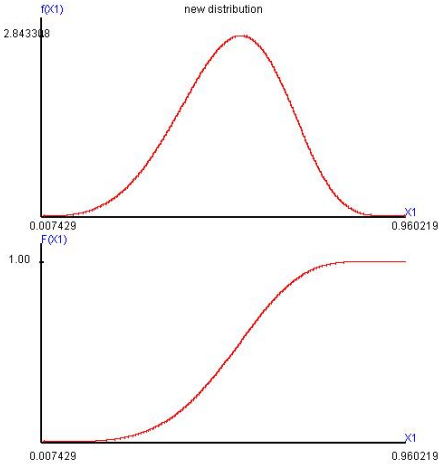


coefficient

Mathematical Mean:		4.00044
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	4.00279
S.D.	:	2.00070
Skewed Coef.	:	0.00044
Kurtosis Coef.	:	4.99856
MAD	:	1.48535
Range	:	45.00037
Mid_range	:	3.65206
Median	:	4.00028
Q1	:	2.87790
Q2	:	4.00028
Q3	:	5.12274
IQR	:	2.24484
C.V.	:	0.50012

12.27). $X \sim Kumaraswamy(a=4, b=10)$,

pdf and df

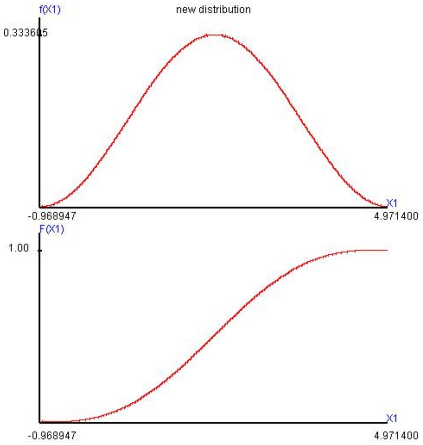


coefficient

Mathematical Mean:	0.50202
Geometrical Mean :	0.48085
Harmonic Mean :	0.45466
Variance :	0.01827
S.D. :	0.13515
Skewed Coef. :	-0.22279
Kurtosis Coef. :	2.70088
MAD :	0.10948
Range :	0.95633
Mid_range :	0.48382
Median :	0.50873
Q1 :	0.41037
Q2 :	0.50873
Q3 :	0.59986
IQR :	0.18949
C.V. :	0.26922

12.28). $X \sim Rasied\_\cos ine(\mu=2, s=3)$,

pdf and df

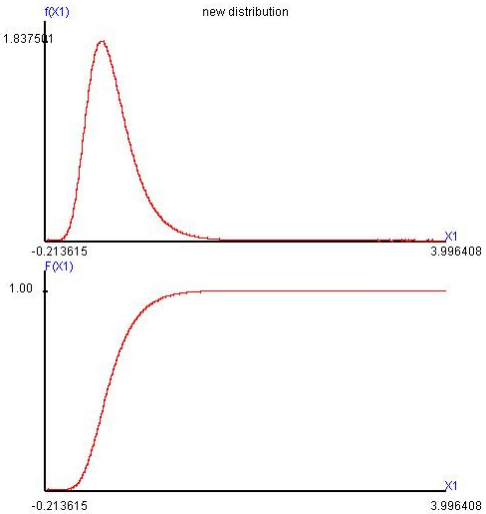


coefficient

Mathematical Mean:	2.00018
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	1.17661
S.D. :	1.08472
Skewed Coef. :	-0.00003
Kurtosis Coef. :	2.40620
MAD :	0.89222
Range :	5.96243
Mid_range :	2.00123
Median :	2.00018
Q1 :	1.20583
Q2 :	2.00018
Q3 :	2.79450
IQR :	1.58868
C.V. :	0.54231

12.29). $X \sim Gumbel(Type\ \ I)(a=5, b=6)$,

pdf and df

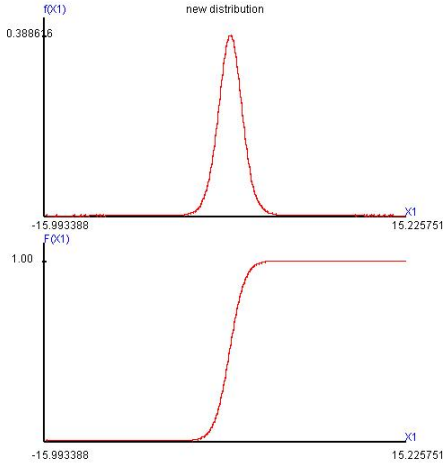


coefficient

Mathematical Mean:	0.47378
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	0.06580
S.D. :	0.25651
Skewed Coef. :	1.13974
Kurtosis Coef. :	5.40127
MAD :	0.19662
Range :	4.22567
Mid_range :	1.89140
Median :	0.43163
Q1 :	0.29302
Q2 :	0.43163
Q3 :	0.60750
IQR :	0.31448
C.V. :	0.54142

12.42). $X \sim t_{(df=10)}$,

pdf and df

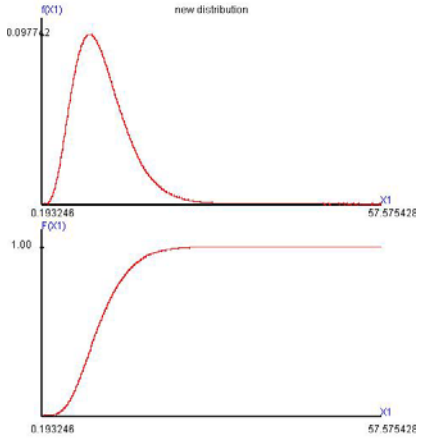


coefficient

Mathematical Mean:		0.00010
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	1.25001
S.D.	:	1.11804
Skewed Coef.	:	-0.00014
Kurtosis Coef.	:	3.99925
MAD	:	0.86464
Range	:	31.33520
Mid_range	:	-0.38382
Median	:	0.00021
Q1	:	-0.69965
Q2	:	0.00021
Q3	:	0.69971
IQR	:	1.39936
C.V.	: none	

12.43). $X \sim \chi^2_{10}$,

pdf and df

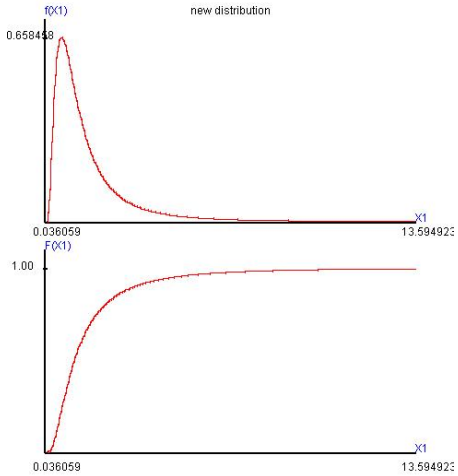


coefficient

Mathematical Mean:		9.99971
Geometrical Mean :		9.01829
Harmonic Mean	:	8.00013
Variance	:	19.99505
S.D.	:	4.47158
Skewed Coef.	:	0.89431
Kurtosis Coef.	:	4.19976
MAD	:	3.50895
Range	:	57.59550
Mid_range	:	28.88434
Median	:	9.34130
Q1	:	6.73720
Q2	:	9.34130
Q3	:	12.54846
IQR	:	5.81126
C.V.	:	0.44717

12.44). $X \sim F\left(d_1 = df_1 = 10, d_2 = df_2 = 5\right)$

pdf and df

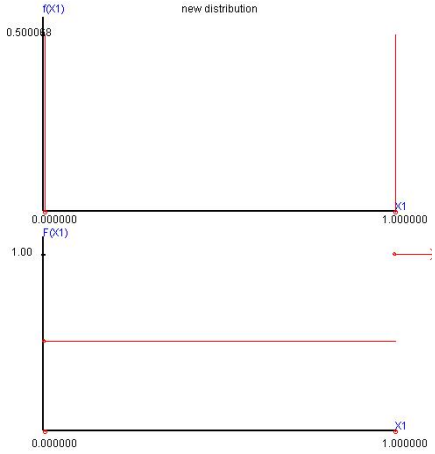


coefficient

Mathematical Mean:		1.66716
Geometrical Mean :		1.11621
Harmonic Mean	:	0.80009
Variance	:	7.19582
S.D.	:	2.68250
Skewed Coef.	:	132.54482
Kurtosis Coef.	:	149601.89512
MAD	:	1.16804
Range	:	4413.75931
Mid_range	:	2206.88954
Median	:	1.07318
Q1	:	0.63078
Q2	:	1.07318
Q3	:	1.88987
IQR	:	1.25909
C.V.	:	1.60903

12.59). $X \sim B(1, p = 0.5)$,

pmf and df

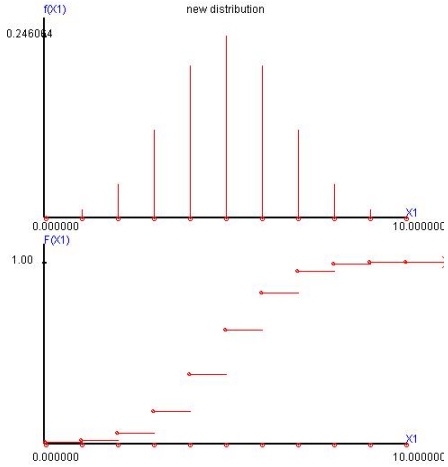


coefficient

Mathematical Mean:	0.49993
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	0.25000
S.D. :	0.50000
Skewed Coef. :	0.00027
Kurtosis Coef. :	1.00000
MAD :	0.50000
Range :	1.00000
Mid_range :	0.50000
Median :	0.00000
Q1 :	0.00000
Q2 :	0.00000
Q3 :	1.00000
IQR :	1.00000
C.V. :	1.00014

12.60). $X \sim B(10, p = 0.5)$

pmf and df

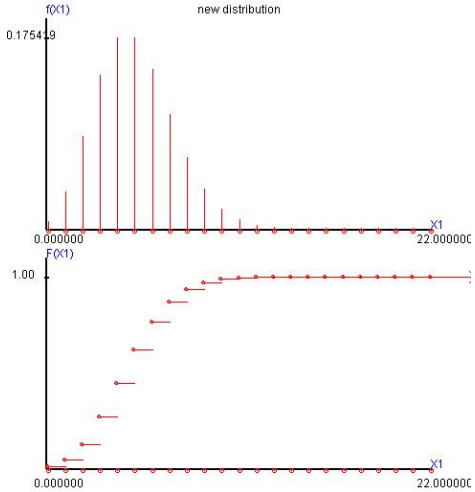


coefficient

Mathematical Mean:	4.99985
Geometrical Mean : none	
Harmonic Mean : none	
Variance :	2.49983
S.D. :	1.58108
Skewed Coef. :	-0.00030
Kurtosis Coef. :	2.79994
MAD :	1.23050
Range :	10.00000
Mid_range :	5.00000
Median :	5.00000
Q1 :	4.00000
Q2 :	5.00000
Q3 :	6.00000
IQR :	2.00000
C.V. :	0.31623

12.61). $X \sim P(\lambda = 5)$,

pmf and df

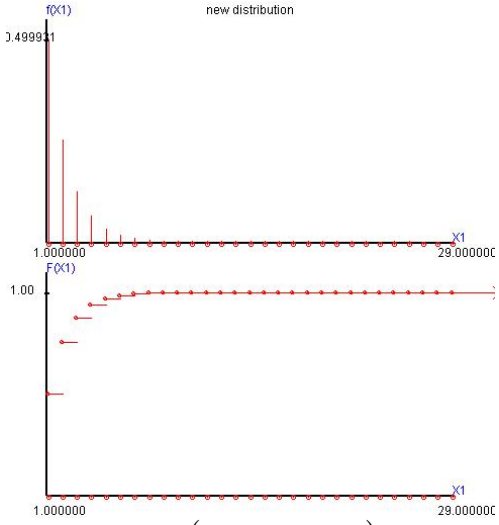


coefficient

算術平均數:	5.00031
幾何平均數: 不存在	
調和平均數: 不存在	
變異數 :	5.00226
標準差 :	2.23657
偏態係數 :	0.44744
峰態係數 :	3.20042
MAD :	1.75513
全距 :	22.00000
中距 :	11.00000
中位數 :	5.00000
Q1 :	3.00000
Q2 :	5.00000
Q3 :	6.00000
IQR :	3.00000
C.V. :	0.44729

12.62). $X \sim G(p=0.5)$,

pmf and df

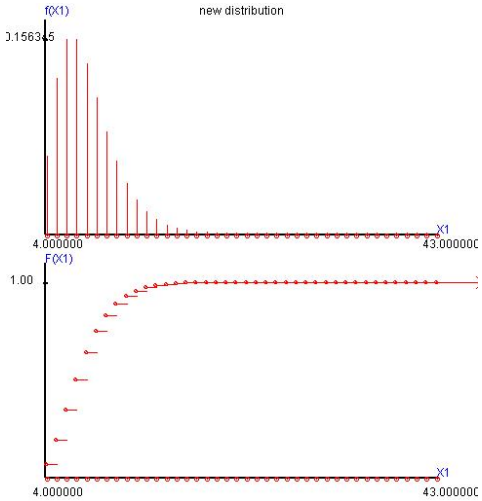


coefficient

算術平均數:		2.00002
幾何平均數:		1.66175
調和平均數:		1.44276
變異數	:	1.99942
標準差	:	1.41401
偏態係數	:	2.11960
峰態係數	:	9.47709
MAD	:	0.99989
全距	:	28.00000
中距	:	15.00000
中位數	:	2.00000
Q1	:	1.00000
Q2	:	2.00000
Q3	:	2.00000
IQR	:	1.00000
C.V.	:	0.70700

12.63). $X \sim NB(r=4, p=0.5)$,

pmf and df

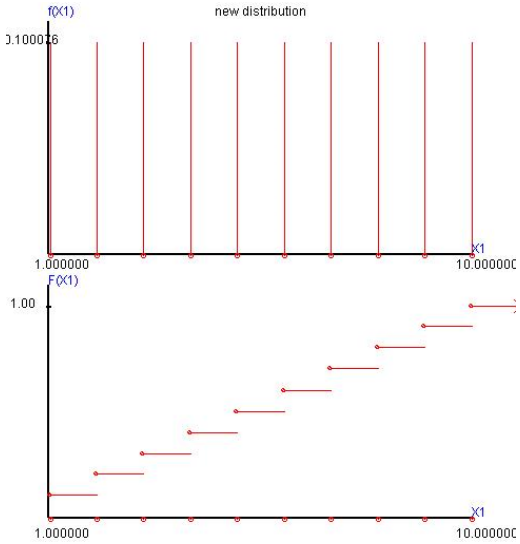


coefficient

算術平均數:		8.00061
幾何平均數:		7.54769
調和平均數:		7.13380
變異數	:	8.00270
標準差	:	2.82890
偏態係數	:	1.06099
峰態係數	:	4.62863
MAD	:	2.18803
全距	:	39.00000
中距	:	23.50000
中位數	:	8.00000
Q1	:	6.00000
Q2	:	8.00000
Q3	:	10.00000
IQR	:	4.00000
C.V.	:	0.35359

12.64). $X \sim$ Discrete Uniform(N=10),

pmf and df



coefficient

算術平均數:		5.50008
幾何平均數:		4.52872
調和平均數:		3.41402
變異數	:	8.25006
標準差	:	2.87229
偏態係數	:	-0.00020
峰態係數	:	1.77578
MAD	:	2.50002
全距	:	9.00000
中距	:	5.50000
中位數	:	6.00000
Q1	:	3.00000
Q2	:	6.00000
Q3	:	8.00000
IQR	:	5.00000
C.V.	:	0.52223