2.11) $X_1,...,X_{10} \overset{iid}{\sim} Cauchy(\mu=0,\sigma=1)$,

$Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(1)}$,

$Y_2 = The\ \ 2nd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(2)}$,

$Y_3 = The\ \ 3rd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(3)}$,

$Y_4 = The\ \ 4th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(4)}$,

$Y_5 = The\ \ 5th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(5)}$,

$Y_6 = The\ \ 6th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(6)}$,

$Y_7 = The\ \ 7th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(7)}$,

$Y_8 = The\ \ 8th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(8)}$,

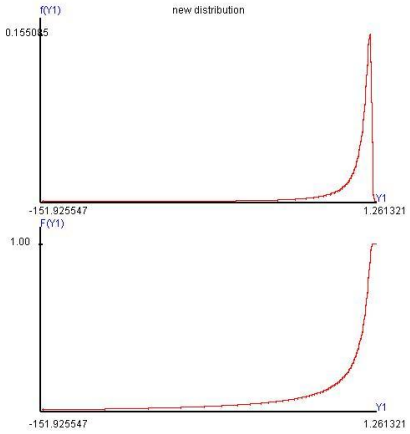
$Y_9 = The\ \ 9th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(9)}$,

$Y_{10} = The\ \ 10th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}) = X_{(10)}$

2.11.1) $Y_1,...,Y_{10}$ probability distributions.

2.11.1.1) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

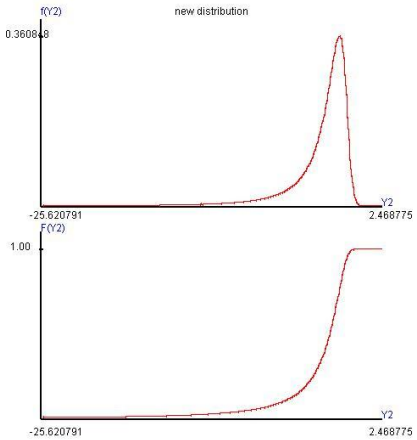
$f_{Y_1}(y_1), F_{Y_1}(y_1)$ coefficient



Mathematical Mean:		-11.65041
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	467.72262
S.D.	:	21.62690
Skewed Coef.	:	-4.45830
Kurtosis Coef.	:	27.25733
MAD	:	11.63241
Range	:	201.55672
Mid_range	:	-99.22131
Median	:	-4.58624
Q1	:	-10.62937
Q2	:	-4.58624
Q3	:	-2.29888
IQR	:	8.33049
C.V.	: none	

2.11.1.2) $Y_2 = The\ \ 2nd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

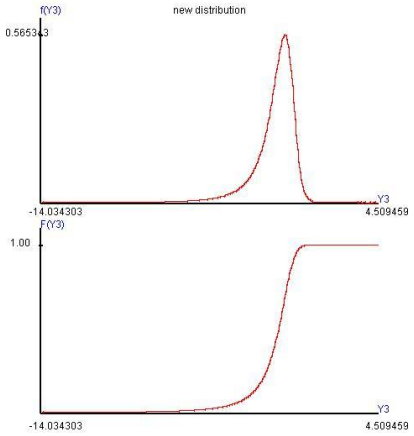
$f_{Y_2}(y_2), F_{Y_2}(y_2)$ coefficient



Mathematical Mean:		-2.81774
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	17.54655
S.D.	:	4.18886
Skewed Coef.	:	-9.23081
Kurtosis Coef.	:	173.06455
MAD	:	2.07413
Range	:	201.47599
Mid_range	:	-98.21499
Median	:	-1.77493
Q1	:	-3.15537
Q2	:	-1.77493
Q3	:	-1.01181
IQR	:	2.14356
C.V.	: none	

2.11.1.3) $Y_3 = The\ \ 3rd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

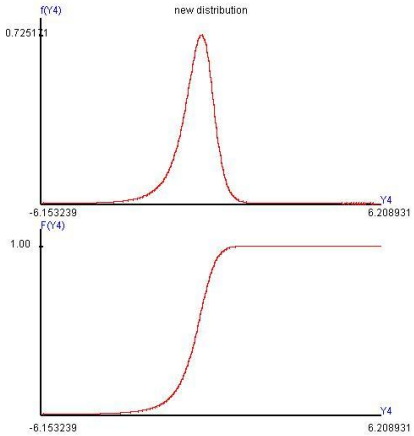
$f_{Y_3}(y_3), F_{Y_3}(y_3)$ coefficient



Mathematical Mean:		-1.25794
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	2.01776
S.D.	:	1.42048
Skewed Coef.	:	-6.21435
Kurtosis Coef.	:	131.62244
MAD	:	0.86357
Range	:	157.03813
Mid_range	:	-73.97381
Median	:	-0.94291
Q1	:	-1.61348
Q2	:	-0.94291
Q3	:	-0.48638
IQR	:	1.12710
C.V.	: none	

2.11.1.4) $Y_4 = The\ \ 4th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

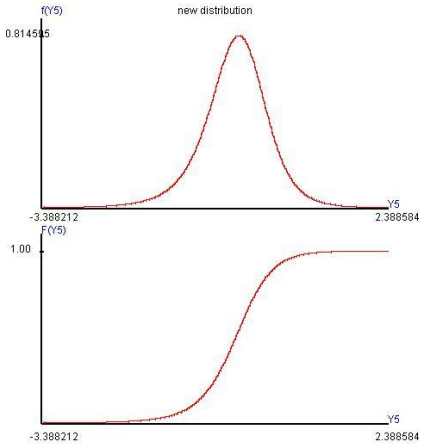
$f_{Y_4}(y_4), F_{Y_4}(y_4)$ coefficient



Mathematical Mean:		-0.60847
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	0.62154
S.D.	:	0.78838
Skewed Coef.	:	-2.71528
Kurtosis Coef.	:	36.18083
MAD	:	0.54622
Range	:	86.74660
Mid_range	:	-37.14050
Median	:	-0.48770
Q1	:	-0.92951
Q2	:	-0.48770
Q3	:	-0.13322
IQR	:	0.79629
C.V.	: none	

2.11.1.5) $Y_5 = The\ \ 5th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

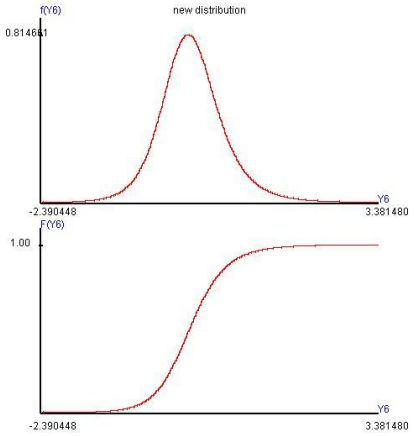
$f_{Y_5}(y_5), F_{Y_5}(y_5)$ coefficient



Mathematical Mean:		-0.18550
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	0.36870
S.D.	:	0.60721
Skewed Coef.	:	-0.74932
Kurtosis Coef.	:	9.17922
MAD	:	0.44546
Range	:	41.37531
Mid_range	:	-8.14135
Median	:	-0.15238
Q1	:	-0.50493
Q2	:	-0.15238
Q3	:	0.17561
IQR	:	0.68054
C.V.	: none	

2.11.1.6) $Y_6 = The\ \ 6th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

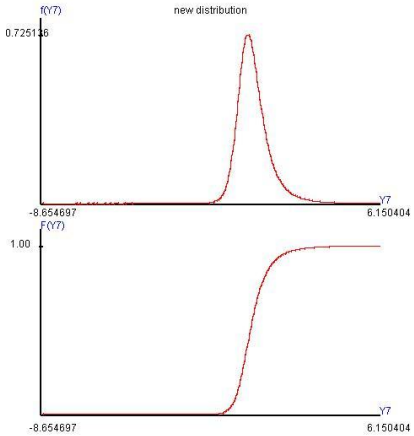
$f_{Y_6}(y_6), F_{Y_6}(y_6)$ coefficient



Mathematical Mean:		0.18553
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	0.36864
S.D.	:	0.60715
Skewed Coef.	:	0.75015
Kurtosis Coef.	:	10.23760
MAD	:	0.44549
Range	:	74.08478
Mid_range	:	21.31695
Median	:	0.15247
Q1	:	-0.17558
Q2	:	0.15247
Q3	:	0.50506
IQR	:	0.68064
C.V.	:	3.27262

2.11.1.7) $Y_7 = The\ \ 7th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

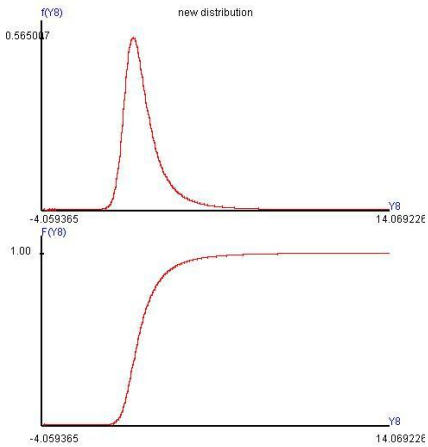
$f_{Y_7}(y_7), F_{Y_7}(y_7)$ coefficient



Mathematical Mean:		0.60863
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	0.62145
S.D.	:	0.78832
Skewed Coef.	:	2.72782
Kurtosis Coef.	:	40.33142
MAD	:	0.54629
Range	:	114.21831
Mid_range	:	48.42588
Median	:	0.48786
Q1	:	0.13334
Q2	:	0.48786
Q3	:	0.92964
IQR	:	0.79630
C.V.	:	1.29524

2.11.1.8) $Y_8 = The\ \ 8th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

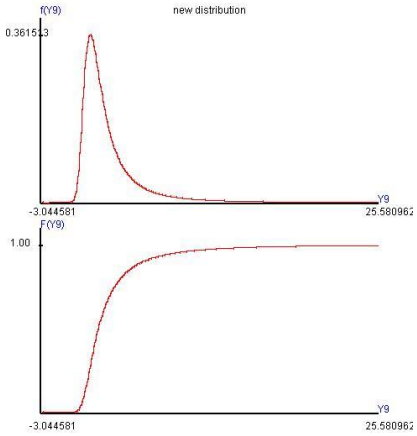
$f_{Y_8}(y_8), F_{Y_8}(y_8)$ coefficient



Mathematical Mean:		1.25808
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	2.01917
S.D.	:	1.42098
Skewed Coef.	:	6.25841
Kurtosis Coef.	:	137.36983
MAD	:	0.86372
Range	:	136.12041
Mid_range	:	63.96584
Median	:	0.94298
Q1	:	0.48638
Q2	:	0.94298
Q3	:	1.61361
IQR	:	1.12723
C.V.	:	1.12948

2.11.1.9) $Y_9 = The\ \ 9th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

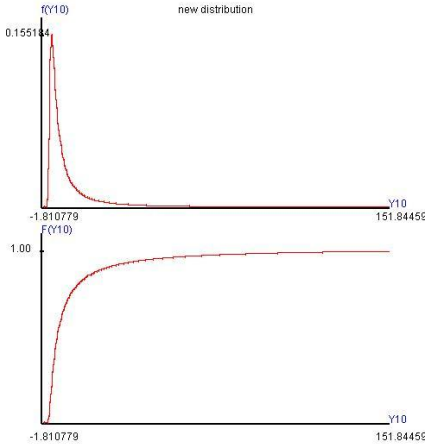
$f_{Y_9}(y_9), F_{Y_9}(y_9)$ coefficient



Mathematical Mean:		2.81655
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	17.40492
S.D.	:	4.17192
Skewed Coef.	:	9.08649
Kurtosis Coef.	:	167.26874
MAD	:	2.07269
Range	:	202.06720
Mid_range	:	97.93376
Median	:	1.77490
Q1	:	1.01154
Q2	:	1.77490
Q3	:	3.15543
IQR	:	2.14390
C.V.	:	1.48122

2.11.1.10) $Y_{10} = The\ \ 10th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f_{Y_{10}}(y_{10}), F_{Y_{10}}(y_{10})$ coefficient

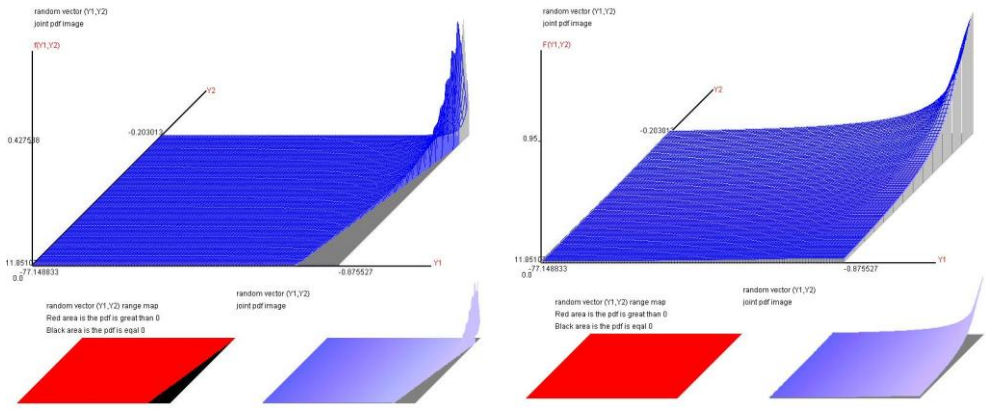


Mathematical Mean:		11.64857
Geometrical Mean : none		
Harmonic Mean : none		
Variance	:	467.44210
S.D.	:	21.62041
Skewed Coef.	:	4.45714
Kurtosis Coef.	:	27.24430
MAD	:	11.63036
Range	:	202.10730
Mid_range	:	98.94624
Median	:	4.58558
Q1	:	2.29851
Q2	:	4.58558
Q3	:	10.62963
IQR	:	8.33112
C.V.	:	1.85606

2.11.1.11) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}),$

$Y_2 = The\ \ 2nd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f(y_1, y_2)$ $F(y_1, y_2)$

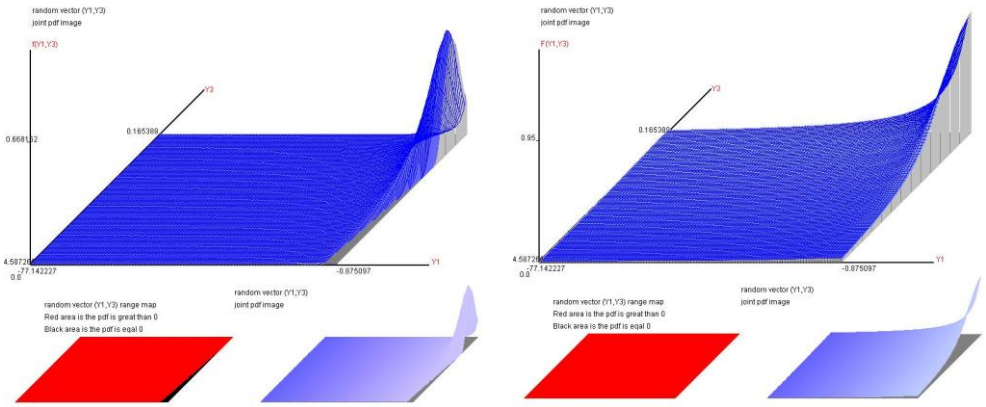


E(Y1)= -11.6502, Var(Y1)= 467.7476
E(Y2)= -2.8173, Var(Y2)= 17.5287
Cov(Y1,Y2)= 36.9904,
Y1 and Y2 correlation coefficient=0.4085.

2.11.1.12) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}),$

$Y_3 = The\ \ 3rd\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f(y_1,y_3)$ $F(y_1,y_3)$

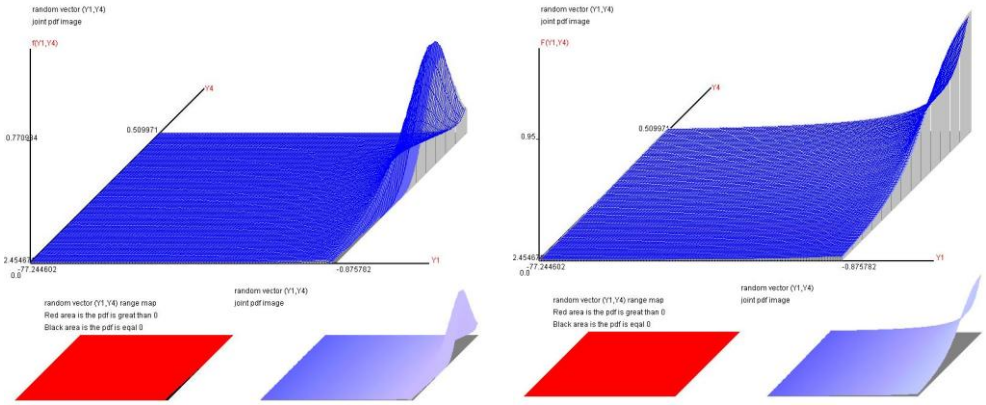


E(Y1)= -11.6506, Var(Y1)= 467.6760
E(Y3)= -1.2581, Var(Y3)= 2.0253
Cov(Y1,Y3)= 8.3440,
Y1 and Y3 correlation coefficient=0.2711.

2.11.1.13) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10}),$

$Y_4 = The\ \ 4th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f(y_1,y_4)$ $F(y_1,y_4)$

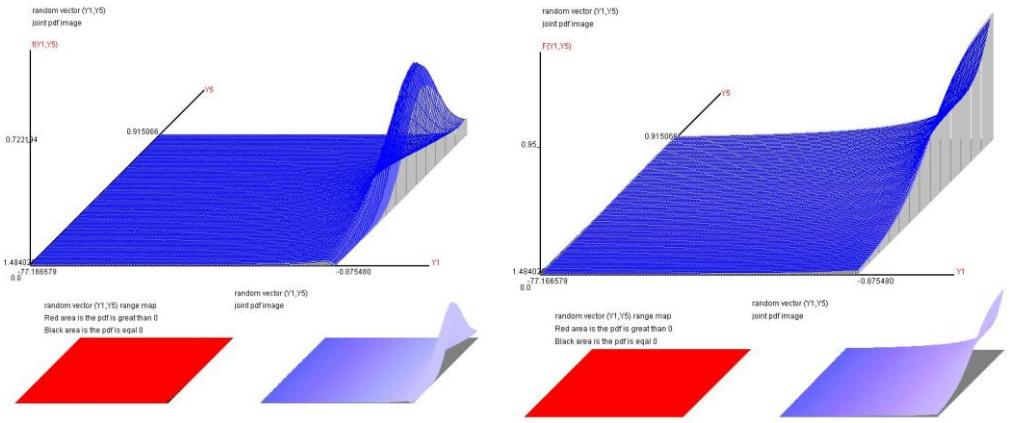


E(Y1)= -11.6501, Var(Y1)= 467.6395
E(Y4)= -0.6085, Var(Y4)= 0.6213
Cov(Y1,Y4)= 3.4963,
Y1 and Y4 correlation coefficient=0.2051.

2.11.1.14) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$,

$Y_5 = The\ \ 5th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f(y_1,y_5)$ $F(y_1,y_5)$

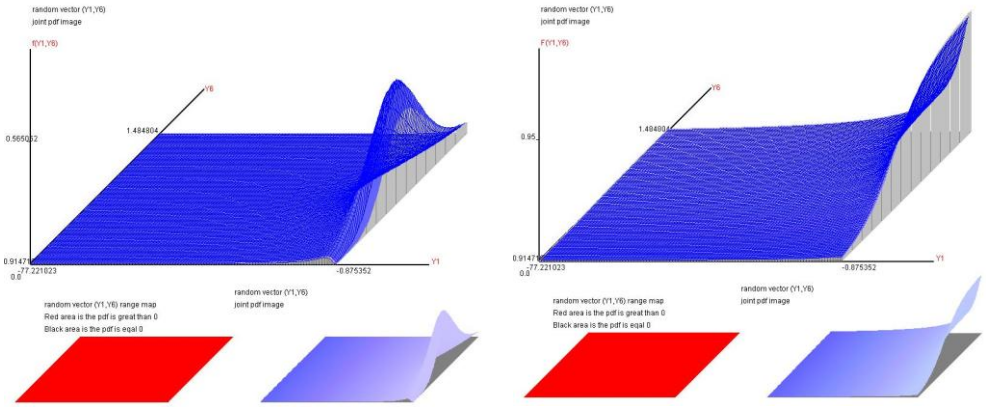


E(Y1)= -11.6489, Var(Y1)= 467.4709
E(Y5)= -0.1855, Var(Y5)= 0.3685
Cov(Y1,Y5)= 2.0761,
Y1 and Y5 correlation coefficient=0.1582.

2.11.1.15) $Y_1 = The\ \ 1st\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$,

$Y_6 = The\ \ 6th\ \ order\ \ statistic\ \ of\ \ (X_1,..,X_{10})$

$f(y_1,y_6)$ $F(y_1,y_6)$



E(Y1)= -11.6505, Var(Y1)= 467.6887
E(Y6)= 0.1855, Var(Y6)= 0.3686
Cov(Y1,Y6)= 1.5715,
Y1 and Y6 correlation coefficient=0.1197.