

# Lab 1

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You should have RStudio installed to edit this file. You will write code in places marked “TO-DO” to complete the problems. Some of this will be a pure programming assignment. The tools for the solutions to these problems can be found in the class practice lectures. I want you to use the methods I taught you, not for you to google and come up with whatever works. You won’t learn that way.

To “hand in” the homework, you should compile or publish this file into a PDF that includes output of your code. Once it’s done, push by the deadline to your repository in a directory called “labs”.

- Print out the numerical constant pi with ten digits after the decimal point using the internal constant pi.

```
options(digits=11)
pi
## [1] 3.1415926536
```

- Sum up the first 103 terms of the series  $1 + 1/2 + 1/4 + 1/8 + \dots$

```
sum(1/2^(0:102))
## [1] 2
```

- Find the product of the first 37 terms in the sequence  $1/3, 1/6, 1/9 \dots$

```
prod(1/3^(1:37))
## [1] 0
```

- Find the product of the first 387 terms of  $1 * 1/2 * 1/4 * 1/8 * \dots$

```
prod(1/2^(0:386))
## [1] 0
```

Is this answer *exactly* correct?

The answer is not exactly correct because we experienced numerical underflow.

- Figure out a means to express the answer more exactly. Not compute exactly, but express more exactly.

```
sum(log(1/2^(0:386)))
## [1] -51771.856063
-log(2)*sum(0:386)
```

```
## [1] -51771.856063
```

- Create the sequence  $x = [\text{Inf}, 20, 18, \dots, -20]$ .

```
x<-c(Inf, seq(from=20, to=-20, by=-2))
```

```
x
```

```
## [1] Inf 20 18 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14
```

```
## [20] -16 -18 -20
```

Create the sequence  $x = [\log_3(\text{Inf}), \log_3(100), \log_3(98), \dots, \log_3(-20)]$ .

```
x<-c(Inf, seq(from=100, to=-20, by=-2))
```

```
x=log(x, base=3)
```

```
## Warning: NaNs produced
```

```
x
```

```
## [1] Inf 4.19180654858 4.17341725189 4.15464876786 4.13548512895
## [6] 4.11590933734 4.09590327429 4.07544759936 4.05452163807 4.03310325630
## [11] 4.01116871959 3.98869253500 3.96564727304 3.94200336639 3.91772888179
## [16] 3.89278926071 3.86714702345 3.84076143031 3.81358809222 3.78557852143
## [21] 3.75667961083 3.72683302786 3.69597450568 3.66403300988 3.63092975357
## [26] 3.59657702662 3.56087679501 3.52371901429 3.48497958377 3.44451784579
## [31] 3.40217350273 3.35776278143 3.31107361282 3.26185950714 3.20983167673
## [36] 3.15464876786 3.09590327429 3.03310325630 2.96564727304 2.89278926071
## [41] 2.81358809222 2.72683302786 2.63092975357 2.52371901429 2.40217350273
## [46] 2.26185950714 2.09590327429 1.89278926071 1.63092975357 1.26185950714
## [51] 0.63092975357 -Inf NaN NaN NaN
## [56] NaN NaN NaN NaN NaN
## [61] NaN NaN
```

Comment on the appropriateness of the non-numeric values.

Inf is by  $\log(\text{Inf})$ ; -Inf is  $\log(0)$ ; NaN is log negative number.

- Create a vector of booleans where the entry is true if  $x[i]$  is positive and finite.

```
y=!is.nan(x) & is.finite(x) & x>0
```

- Locate the indices of the non-real numbers in this vector. Hint: use the which function. Don't hesitate to use the documentation via `?which`.

```
which(!y==FALSE)
```

```
## [1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26
```

```
## [26] 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
50 51
```

- Locate the indices of the infinite quantities in this vector.

```
which(is.infinite(x))
```

```
## [1] 1 52
```

- Locate the indices of the min and max in this vector. Hint: use the `which.min` and `which.max` functions.

```
which.min(x)
```

```
## [1] 52
```

```
which.max(x)
```

```
## [1] 1
```

- Count the number of unique values in `x`.

```
length(unique(x))
```

```
## [1] 53
```

- Cast `x` to a factor. Do the number of levels make sense?

```
as.factor(x)
```

```
## [1] Inf          4.19180654857877  4.1734172518943
4.15464876785729
## [5] 4.13548512895119  4.11590933734319  4.09590327428938
4.07544759935851
## [9] 4.05452163806914  4.03310325630434  4.01116871959141
3.98869253500376
## [13] 3.96564727304425  3.94200336638929  3.91772888178973
3.89278926071437
## [17] 3.86714702345081  3.84076143030548  3.81358809221559
3.78557852142874
## [21] 3.75667961082847  3.72683302786084  3.69597450568212
3.66403300987579
## [25] 3.63092975357146  3.59657702661571  3.56087679500731
3.52371901428583
## [29] 3.48497958377173  3.44451784578705  3.40217350273288  3.3577627814323
## [33] 3.31107361281783  3.26185950714291  3.20983167673402
3.15464876785729
## [37] 3.09590327428938  3.03310325630434  2.96564727304425
2.89278926071437
## [41] 2.8135880922156  2.72683302786084  2.63092975357146
2.52371901428583
## [45] 2.40217350273288  2.26185950714291  2.09590327428938
1.89278926071437
## [49] 1.63092975357146  1.26185950714291  0.630929753571457 -Inf
## [53] NaN              NaN              NaN              NaN
## [57] NaN              NaN              NaN              NaN
## [61] NaN              NaN
## 53 Levels: -Inf 0.630929753571457 1.26185950714291 ... NaN
```

- Cast `x` to integers. What do we learn about R's infinity representation in the integer data type?

```
as.integer(x)

## Warning: NAs introduced by coercion to integer range

## [1] NA  4  4  4  4  4  4  4  4  4  4  3  3  3  3  3  3  3  3  3  3  3
3  3
## [26]  3  3  3  3  3  3  3  3  3  3  3  3  3  2  2  2  2  2  2  2  2  1
1  1
## [51]  0 NA NA NA NA NA NA NA NA NA NA NA NA NA

x

## [1]                Inf 4.19180654858 4.17341725189 4.15464876786 4.13548512895
## [6] 4.11590933734 4.09590327429 4.07544759936 4.05452163807 4.03310325630
## [11] 4.01116871959 3.98869253500 3.96564727304 3.94200336639 3.91772888179
## [16] 3.89278926071 3.86714702345 3.84076143031 3.81358809222 3.78557852143
## [21] 3.75667961083 3.72683302786 3.69597450568 3.66403300988 3.63092975357
## [26] 3.59657702662 3.56087679501 3.52371901429 3.48497958377 3.44451784579
## [31] 3.40217350273 3.35776278143 3.31107361282 3.26185950714 3.20983167673
## [36] 3.15464876786 3.09590327429 3.03310325630 2.96564727304 2.89278926071
## [41] 2.81358809222 2.72683302786 2.63092975357 2.52371901429 2.40217350273
## [46] 2.26185950714 2.09590327429 1.89278926071 1.63092975357 1.26185950714
## [51] 0.63092975357 -Inf                NaN                NaN                NaN
## [56]                NaN                NaN                NaN                NaN                NaN
## [61]                NaN                NaN
```

- Use `x` to create a new vector `y` containing only the real numbers in `x`.

```
y=x[(!is.nan(x) & is.finite(x) & x>0)]
```

```
## [1] 4.19180654858 4.17341725189 4.15464876786 4.13548512895 4.11590933734
## [6] 4.09590327429 4.07544759936 4.05452163807 4.03310325630 4.01116871959
## [11] 3.98869253500 3.96564727304 3.94200336639 3.91772888179 3.89278926071
## [16] 3.86714702345 3.84076143031 3.81358809222 3.78557852143 3.75667961083
## [21] 3.72683302786 3.69597450568 3.66403300988 3.63092975357 3.59657702662
## [26] 3.56087679501 3.52371901429 3.48497958377 3.44451784579 3.40217350273
## [31] 3.35776278143 3.31107361282 3.26185950714 3.20983167673 3.15464876786
## [36] 3.09590327429 3.03310325630 2.96564727304 2.89278926071 2.81358809222
## [41] 2.72683302786 2.63092975357 2.52371901429 2.40217350273 2.26185950714
## [46] 2.09590327429 1.89278926071 1.63092975357 1.26185950714 0.63092975357
```

- Use the left rectangle method to numerically integrate  $x^2$  from 0 to 1 with rectangle width size  $1e-6$ .

```
sum(seq(from = 0, to = 1-1e-6, by = 1e-6)^2)*1e-6
```

```
## [1] 0.33333283333
```

- Calculate the average of 100 realizations of standard Bernoullis in one line using the `sample` function.

```
sample(c(0,1),size=100,replace=TRUE)
```

```
## [1] 1 0 0 1 0 1 1 0 1 1 0 1 0 1 1 0 1 0 1 0 0 0 1 0 1 1 0 0 0 0 0 0
0 1 0
## [38] 1 0 0 0 0 0 0 1 1 1 1 0 1 0 1 0 0 0 1 0 0 1 1 1 1 0 0 0 0 0 1 1 0 1
0 1 0
## [75] 1 0 0 1 0 1 1 0 0 1 1 0 1 1 1 0 1 1 0 0 0 0 0 0 1 1
```

- Calculate the average of 500 realizations of Bernoullis with  $p = 0.9$  in one line using the sample and mean functions.

```
mean(sample(c(0,1),size=500,replace=TRUE,prob=c(0.1,0.9)))
## [1] 0.874
```

- Calculate the average of 1000 realizations of Bernoullis with  $p = 0.9$  in one line using rbinom.

```
?rbinom
## starting httpd help server ... done
mean(rbinom(n=1000,size=1,prob=0.9))
## [1] 0.916
```

- In class we considered a variable  $x_3$  which measured “criminality”. We imagined  $L = 4$  levels “none”, “infraction”, “misdemeanor” and “felony”. Create a variable  $x_3$  here with 100 random elements (equally probable). Create it as a nominal (i.e. unordered) factor.

```
x_3=as.factor(sample(c("none", "infraction", "misdemeanor",
"felony"),size=100,replace=TRUE))
x_3
## [1] misdemeanor misdemeanor infraction infraction none
infraction
## [7] infraction misdemeanor misdemeanor misdemeanor felony
infraction
## [13] misdemeanor none none infraction none
infraction
## [19] felony none misdemeanor infraction infraction felony
## [25] misdemeanor felony none infraction none
infraction
## [31] misdemeanor infraction misdemeanor misdemeanor infraction felony
## [37] misdemeanor felony misdemeanor felony felony felony
## [43] none misdemeanor infraction felony felony none
## [49] none misdemeanor infraction infraction infraction none
## [55] felony felony none misdemeanor none none
## [61] infraction infraction infraction none none felony
## [67] misdemeanor misdemeanor felony none felony
infraction
## [73] infraction none infraction misdemeanor infraction felony
## [79] felony none infraction infraction infraction none
## [85] infraction none felony felony infraction felony
```

```
## [91] infraction infraction none none misdemeanor none
## [97] felony none infraction felony
## Levels: felony infraction misdemeanor none
```

- Use x\_3 to create x\_3\_bin, a binary feature where 0 is no crime and 1 is any crime.

```
x_3_bin = x_3!="none"
x_3_bin
```

```
## [1] TRUE TRUE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE
TRUE
## [13] TRUE FALSE FALSE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE
TRUE
## [25] TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE
TRUE
## [37] TRUE TRUE TRUE TRUE TRUE TRUE FALSE TRUE TRUE TRUE TRUE
FALSE
## [49] FALSE TRUE TRUE TRUE TRUE FALSE TRUE TRUE FALSE TRUE FALSE
FALSE
## [61] TRUE TRUE TRUE FALSE FALSE TRUE TRUE TRUE TRUE FALSE TRUE
TRUE
## [73] TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE TRUE TRUE
FALSE
## [85] TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE FALSE FALSE TRUE
FALSE
## [97] TRUE FALSE TRUE TRUE
```

- Use x\_3 to create x\_3\_ord, an ordered factor variable. Ensure the proper ordinal ordering.

```
x_3_ord=factor(x_3,level =c("none", "infraction", "misdemeanor" ,
"felony"),order=TRUE)
?factor
x_3_ord

## [1] misdemeanor misdemeanor infraction infraction none
infraction
## [7] infraction misdemeanor misdemeanor misdemeanor felony
infraction
## [13] misdemeanor none none infraction none
infraction
## [19] felony none misdemeanor infraction infraction felony
## [25] misdemeanor felony none infraction none
infraction
## [31] misdemeanor infraction misdemeanor misdemeanor infraction felony
## [37] misdemeanor felony misdemeanor felony felony felony
## [43] none misdemeanor infraction felony felony none
## [49] none misdemeanor infraction infraction infraction none
## [55] felony felony none misdemeanor none none
## [61] infraction infraction infraction none none felony
## [67] misdemeanor misdemeanor felony none felony
infraction
```

```
## [73] infraction none infraction misdemeanor infraction felony
## [79] felony none infraction infraction infraction none
## [85] infraction none felony felony infraction felony
## [91] infraction infraction none none misdemeanor none
## [97] felony none infraction felony
## Levels: none < infraction < misdemeanor < felony
```

- Convert this variable into three binary variables without any information loss and put them into a data matrix.

```
x_3_infraction=as.integer(x_3 == "infraction")
x_3_misdemeanor=as.integer(x_3 == "misdemeanor")
x_3_felony=as.integer(x_3 == "felony")
x=cbind(x_3_infraction,x_3_misdemeanor,x_3_felony)
?cbind
head(x)

##      x_3_infraction x_3_misdemeanor x_3_felony
## [1,]              0                1          0
## [2,]              0                1          0
## [3,]              1                0          0
## [4,]              1                0          0
## [5,]              0                0          0
## [6,]              1                0          0
```

- What should the sum of each row be (in English)?

If the element is “none”, sum is 0, otherwise is 1.

Verify that.

```
rowSums(x)

## [1] 1 1 1 1 0 1 1 1 1 1 1 1 1 1 0 0 1 0 1 1 0 1 1 1 1 1 1 0 1 0 1 1 1 1 1
## [38] 1 1 1 1 1 0 1 1 1 1 0 0 1 1 1 1 0 1 1 0 1 0 0 1 1 1 0 0 1 1 1 1 0 1
## [75] 1 1 1 1 1 0 1 1 1 0 1 0 1 1 1 1 1 1 0 0 1 0 1 0 1 1
```

- How should the column sum look (in English)?

Three value of sum of infraction, sum of misdemeanor, sum of felony.

Verify that.

```
colSums(x)

## x_3_infraction x_3_misdemeanor x_3_felony
##              32              20              23
```

- Generate a matrix with 100 rows where the first column is realization from a normal with mean 17 and variance 38, the second column is uniform between -10 and 10, the third column is poisson with mean 6, the fourth column in exponential with lambda of

9, the fifth column is binomial with  $n = 20$  and  $p = 0.12$  and the sixth column is a binary variable with exactly 24% 1's dispersed randomly. Name the rows the entries of the `fake_first_names` vector.

```
fake_first_names = c(
  "Sophia", "Emma", "Olivia", "Ava", "Mia", "Isabella", "Riley",
  "Aria", "Zoe", "Charlotte", "Lily", "Layla", "Amelia", "Emily",
  "Madelyn", "Aubrey", "Adalyn", "Madison", "Chloe", "Harper",
  "Abigail", "Aaliyah", "Avery", "Evelyn", "Kaylee", "Ella", "Ellie",
  "Scarlett", "Arianna", "Hailey", "Nora", "Addison", "Brooklyn",
  "Hannah", "Mila", "Leah", "Elizabeth", "Sarah", "Eliana", "Mackenzie",
  "Peyton", "Maria", "Grace", "Adeline", "Elena", "Anna", "Victoria",
  "Camilla", "Lillian", "Natalie", "Jackson", "Aiden", "Lucas",
  "Liam", "Noah", "Ethan", "Mason", "Caden", "Oliver", "Elijah",
  "Grayson", "Jacob", "Michael", "Benjamin", "Carter", "James",
  "Jayden", "Logan", "Alexander", "Caleb", "Ryan", "Luke", "Daniel",
  "Jack", "William", "Owen", "Gabriel", "Matthew", "Connor", "Jayce",
  "Isaac", "Sebastian", "Henry", "Muhammad", "Cameron", "Wyatt",
  "Dylan", "Nathan", "Nicholas", "Julian", "Eli", "Levi", "Isaiah",
  "Landon", "David", "Christian", "Andrew", "Brayden", "John",
  "Lincoln"
)
n=100
x_col1=rnorm(n,mean =17, sd = 38)
x_col2=as.factor(sample(c(-10,10),size=n,replace=TRUE))
x_col3=rpois(n,lambda=6)
x_col4=rexp(n,rate=9)
x_col5=rbinom(n,size=20,prob=0.12)
x_col6=as.factor(sample(c(0,1),size=n,replace=TRUE,prob=c(0.76,0.24)))
x_data=c(x_col1,x_col2,x_col3,x_col4,x_col5,x_col6)
x=matrix(data=x_data,nrow = n,ncol = 6,byrow = FALSE,dimnames=NULL)
rownames(x)=fake_first_names
x
```

##		[,1]	[,2]	[,3]	[,4]	[,5]	[,6]
## Sophia		75.89457775673	2	7	0.0272337906580	1	1
## Emma		19.14325104781	1	6	0.2097148572312	3	1
## Olivia		-0.72397640238	2	8	0.1032043404624	3	1
## Ava		5.62768595955	1	4	0.0017296782817	4	1
## Mia		52.66225381068	2	2	0.0462309622413	3	1
## Isabella		-64.58170424198	2	7	0.0051001045956	3	1
## Riley		47.08287299229	1	5	0.0194464416967	0	1
## Aria		-53.67582791829	2	6	0.2365394601833	2	1
## Zoe		-12.67524774144	2	13	0.0036307115079	1	1
## Charlotte		20.29020222163	2	7	0.0528256131543	3	2
## Lily		11.30667963279	1	4	0.3158131310062	5	1
## Layla		67.58300181829	2	8	0.3167058467288	3	1
## Amelia		-5.06676635742	2	6	0.0067890547216	1	1
## Emily		-7.22619912833	1	6	0.1936721165857	2	2
## Madelyn		36.25457399950	1	8	0.1492495803737	4	1
## Aubrey		26.59623034492	1	9	0.0021978279886	3	2



## Adalyn	16.75469056928	1	4	0.0491493835838	2	2
## Madison	21.03910647242	1	10	0.1049801609950	5	1
## Chloe	-42.02071090184	1	11	0.0163798018985	1	1
## Harper	23.99684052335	2	6	0.0689254945351	2	1
## Abigail	24.83466947095	1	4	0.1653451286163	1	1
## Aaliyah	61.92527181716	1	5	0.0215930714908	4	1
## Avery	10.55098843103	1	7	0.0181755380084	2	1
## Evelyn	-1.43272860666	1	9	0.2493542457545	7	1
## Kaylee	-6.93112895682	1	5	0.0609703299900	5	1
## Ella	16.76246645195	1	5	0.1449371198559	1	2
## Ellie	48.26248572628	2	7	0.1876047521190	1	1
## Scarlett	-27.76931487748	2	6	0.0171015394946	1	1
## Arianna	23.22715993277	2	9	0.0667415581540	2	1
## Hailey	76.37414552282	1	6	0.0683739102032	4	1
## Nora	5.71377506075	2	7	0.2030417540328	3	1
## Addison	89.42438171303	1	4	0.0629676648209	1	1
## Brooklyn	17.85169647614	2	4	0.0203385254265	4	1
## Hannah	-50.61119762985	2	5	0.1196358670537	4	1
## Mila	-39.98395511245	1	4	0.0158912986373	3	1
## Leah	-29.24319284495	2	4	0.2276204369041	2	2
## Elizabeth	14.10507892005	2	6	0.0171230415710	2	1
## Sarah	-11.47574288925	1	4	0.0516268886212	0	1
## Eliana	14.70132547207	2	5	0.0465762779738	5	2
## Mackenzie	66.28842560935	1	5	0.0604183825901	4	1
## Peyton	50.05540105058	1	3	0.0309439398048	3	1
## Maria	75.62141822950	2	7	0.0543127943141	5	1
## Grace	41.19054012724	1	3	0.0958373263018	3	1
## Adeline	119.52254459546	2	3	0.0240338871658	0	1
## Elena	88.14101146764	1	3	0.0882381232823	1	1
## Anna	81.87944235352	1	2	0.0076674873320	1	2
## Victoria	-22.66663661188	2	9	0.2452473076650	5	1
## Camilla	95.31969399693	2	5	0.1940023338122	3	2
## Lillian	-29.24335241496	1	5	0.0708192862156	2	2
## Natalie	37.14939810831	2	4	0.6528301619448	2	1
## Jackson	-22.02151576889	2	6	0.1049461179470	3	1
## Aiden	41.09903833193	2	3	0.1145309642325	3	1
## Lucas	3.96494613974	1	7	0.0179349891846	4	1
## Liam	-7.52293359847	2	7	0.0706293249192	1	1
## Noah	75.22959622573	1	5	0.0018088471455	6	1
## Ethan	-6.21632495474	1	8	0.0664598704316	2	1
## Mason	-3.32358776449	2	4	0.0112632521325	3	1
## Caden	15.19998816302	2	8	0.0657745157886	4	1
## Oliver	-2.07515136052	2	8	0.1059476570697	2	1
## Elijah	-18.16642724493	2	8	0.0190726277776	2	1
## Grayson	94.45029305116	2	6	0.0134333581146	3	1
## Jacob	33.84816843434	2	8	0.1595812166637	0	1
## Michael	-27.99407424403	2	5	0.0702199874342	4	1
## Benjamin	19.29860537227	2	5	0.0711001793130	4	1
## Carter	43.07846661118	2	4	0.2996003037799	4	1
## James	-45.80014791808	2	7	0.0134047457638	3	1

## Jayden	38.88319741566	1	3	0.0483260458956	2	2
## Logan	22.17789188962	1	5	0.0031879335745	3	1
## Alexander	22.32435690456	2	6	0.2113780428873	1	2
## Caleb	-28.10256368149	2	5	0.0091290004421	1	1
## Ryan	77.90183473127	2	5	0.0620551117075	1	1
## Luke	34.07819814900	2	4	0.5481349349639	0	1
## Daniel	76.69627220729	2	3	0.0628031832683	3	1
## Jack	-13.77324998352	1	8	0.0989934389122	2	1
## William	72.63552348387	1	5	0.0100317563241	2	1
## Owen	25.42043786265	1	3	0.0284763108660	5	1
## Gabriel	27.56364331050	2	9	0.1007411883476	2	1
## Matthew	30.57997964534	2	8	0.2458649301037	1	1
## Connor	40.06972260020	2	7	0.0500709165809	3	1
## Jayce	42.45006329225	2	7	0.1064240136716	3	1
## Isaac	39.37459561840	1	11	0.1262511541606	2	1
## Sebastian	-17.06884376630	2	4	0.0690305874062	4	1
## Henry	72.63121438555	2	8	0.0918968717802	5	1
## Muhammad	27.62829783169	1	5	0.1859963188475	4	1
## Cameron	-20.70048780474	2	6	0.1238465647477	0	1
## Wyatt	-1.34275738833	2	5	0.0649256906472	3	1
## Dylan	-26.88000103265	2	6	0.0353708662622	2	1
## Nathan	-39.79821175565	2	2	0.0888354857736	1	1
## Nicholas	34.26971267583	2	11	0.0250569961718	2	2
## Julian	9.36461669935	2	7	0.1796790042018	2	1
## Eli	47.51455185611	1	6	0.2033126784602	0	1
## Levi	102.23057565187	2	4	0.0080704995073	2	1
## Isaiah	5.02471173234	2	3	0.0890772014603	3	2
## Landon	16.22493257333	1	1	0.0653604517240	2	1
## David	40.76705592022	1	5	0.1437068663284	5	1
## Christian	-42.64029252939	1	11	0.1403247263857	2	1
## Andrew	-25.73724611570	1	0	0.2173401971979	3	1
## Brayden	81.52136316067	1	6	0.1580702676862	2	2
## John	78.20272537547	1	9	0.0094382604067	3	1
## Lincoln	17.45809697212	2	9	0.1177862016944	2	1

- Create a data frame of the same data as above except make the binary variable a factor “DOMESTIC” vs “FOREIGN” for 0 and 1 respectively. Use RStudio’s View function to ensure this worked as desired.

```

x_str=as.factor(sample(c("DOMESTIC","FOREIGN"),size=n,replace = TRUE))
x_col7=factor(x_str,levels=c("DOMESTIC","FOREIGN"),labels=c(0,1))
x_col7

## [1] 0 0 1 1 1 1 0 0 1 0 0 1 0 1 1 0 1 1 0 0 0 0 0 0 1 0 1 1 1 1 0 1 0 0
## [38] 1 1 0 0 0 0 1 0 1 1 0 1 0 1 1 0 0 0 1 0 0 1 0 1 1 1 0 1 0 0 0 0 1 1
## [75] 0 1 0 1 1 0 1 0 0 1 1 1 0 0 0 1 1 1 0 0 1 1 1 1 1 1 0
## Levels: 0 1

```

```
x_data=c(x_col1,x_col2,x_col3,x_col4,x_col5,x_col6,x_col7)
x=matrix(data=x_data,nrow = n,ncol = 7,byrow = FALSE,dimnames=NULL)
rownames(x)=fake_first_names
x  #I dont know why I get 1 & 2 for it
```

##		[,1]	[,2]	[,3]		[,4]	[,5]	[,6]	[,7]
## Sophia	75.89457775673	2	7	0.0272337906580	1	1	1		
## Emma	19.14325104781	1	6	0.2097148572312	3	1	1		
## Olivia	-0.72397640238	2	8	0.1032043404624	3	1	2		
## Ava	5.62768595955	1	4	0.0017296782817	4	1	2		
## Mia	52.66225381068	2	2	0.0462309622413	3	1	2		
## Isabella	-64.58170424198	2	7	0.0051001045956	3	1	2		
## Riley	47.08287299229	1	5	0.0194464416967	0	1	1		
## Aria	-53.67582791829	2	6	0.2365394601833	2	1	1		
## Zoe	-12.67524774144	2	13	0.0036307115079	1	1	2		
## Charlotte	20.29020222163	2	7	0.0528256131543	3	2	1		
## Lily	11.30667963279	1	4	0.3158131310062	5	1	1		
## Layla	67.58300181829	2	8	0.3167058467288	3	1	2		
## Amelia	-5.06676635742	2	6	0.0067890547216	1	1	1		
## Emily	-7.22619912833	1	6	0.1936721165857	2	2	2		
## Madelyn	36.25457399950	1	8	0.1492495803737	4	1	2		
## Aubrey	26.59623034492	1	9	0.0021978279886	3	2	1		
## Adalyn	16.75469056928	1	4	0.0491493835838	2	2	2		
## Madison	21.03910647242	1	10	0.1049801609950	5	1	2		
## Chloe	-42.02071090184	1	11	0.0163798018985	1	1	1		
## Harper	23.99684052335	2	6	0.0689254945351	2	1	1		
## Abigail	24.83466947095	1	4	0.1653451286163	1	1	1		
## Aaliyah	61.92527181716	1	5	0.0215930714908	4	1	1		
## Avery	10.55098843103	1	7	0.0181755380084	2	1	1		
## Evelyn	-1.43272860666	1	9	0.2493542457545	7	1	1		
## Kaylee	-6.93112895682	1	5	0.0609703299900	5	1	2		
## Ella	16.76246645195	1	5	0.1449371198559	1	2	1		
## Ellie	48.26248572628	2	7	0.1876047521190	1	1	2		
## Scarlett	-27.76931487748	2	6	0.0171015394946	1	1	2		
## Arianna	23.22715993277	2	9	0.0667415581540	2	1	2		
## Hailey	76.37414552282	1	6	0.0683739102032	4	1	2		
## Nora	5.71377506075	2	7	0.2030417540328	3	1	1		
## Addison	89.42438171303	1	4	0.0629676648209	1	1	2		
## Brooklyn	17.85169647614	2	4	0.0203385254265	4	1	1		
## Hannah	-50.61119762985	2	5	0.1196358670537	4	1	1		
## Mila	-39.98395511245	1	4	0.0158912986373	3	1	2		
## Leah	-29.24319284495	2	4	0.2276204369041	2	2	2		
## Elizabeth	14.10507892005	2	6	0.0171230415710	2	1	2		
## Sarah	-11.47574288925	1	4	0.0516268886212	0	1	2		
## Eliana	14.70132547207	2	5	0.0465762779738	5	2	2		
## Mackenzie	66.28842560935	1	5	0.0604183825901	4	1	1		
## Peyton	50.05540105058	1	3	0.0309439398048	3	1	1		
## Maria	75.62141822950	2	7	0.0543127943141	5	1	1		
## Grace	41.19054012724	1	3	0.0958373263018	3	1	1		
## Adeline	119.52254459546	2	3	0.0240338871658	0	1	2		

## Elena	88.14101146764	1	3	0.0882381232823	1	1	1
## Anna	81.87944235352	1	2	0.0076674873320	1	2	2
## Victoria	-22.66663661188	2	9	0.2452473076650	5	1	2
## Camilla	95.31969399693	2	5	0.1940023338122	3	2	1
## Lillian	-29.24335241496	1	5	0.0708192862156	2	2	2
## Natalie	37.14939810831	2	4	0.6528301619448	2	1	1
## Jackson	-22.02151576889	2	6	0.1049461179470	3	1	2
## Aiden	41.09903833193	2	3	0.1145309642325	3	1	2
## Lucas	3.96494613974	1	7	0.0179349891846	4	1	1
## Liam	-7.52293359847	2	7	0.0706293249192	1	1	1
## Noah	75.22959622573	1	5	0.0018088471455	6	1	1
## Ethan	-6.21632495474	1	8	0.0664598704316	2	1	2
## Mason	-3.32358776449	2	4	0.0112632521325	3	1	1
## Caden	15.19998816302	2	8	0.0657745157886	4	1	1
## Oliver	-2.07515136052	2	8	0.1059476570697	2	1	2
## Elijah	-18.16642724493	2	8	0.0190726277776	2	1	1
## Grayson	94.45029305116	2	6	0.0134333581146	3	1	2
## Jacob	33.84816843434	2	8	0.1595812166637	0	1	2
## Michael	-27.99407424403	2	5	0.0702199874342	4	1	2
## Benjamin	19.29860537227	2	5	0.0711001793130	4	1	1
## Carter	43.07846661118	2	4	0.2996003037799	4	1	2
## James	-45.80014791808	2	7	0.0134047457638	3	1	1
## Jayden	38.88319741566	1	3	0.0483260458956	2	2	1
## Logan	22.17789188962	1	5	0.0031879335745	3	1	1
## Alexander	22.32435690456	2	6	0.2113780428873	1	2	1
## Caleb	-28.10256368149	2	5	0.0091290004421	1	1	2
## Ryan	77.90183473127	2	5	0.0620551117075	1	1	2
## Luke	34.07819814900	2	4	0.5481349349639	0	1	1
## Daniel	76.69627220729	2	3	0.0628031832683	3	1	2
## Jack	-13.77324998352	1	8	0.0989934389122	2	1	1
## William	72.63552348387	1	5	0.0100317563241	2	1	1
## Owen	25.42043786265	1	3	0.0284763108660	5	1	2
## Gabriel	27.56364331050	2	9	0.1007411883476	2	1	1
## Matthew	30.57997964534	2	8	0.2458649301037	1	1	2
## Connor	40.06972260020	2	7	0.0500709165809	3	1	2
## Jayce	42.45006329225	2	7	0.1064240136716	3	1	1
## Isaac	39.37459561840	1	11	0.1262511541606	2	1	2
## Sebastian	-17.06884376630	2	4	0.0690305874062	4	1	1
## Henry	72.63121438555	2	8	0.0918968717802	5	1	1
## Muhammad	27.62829783169	1	5	0.1859963188475	4	1	2
## Cameron	-20.70048780474	2	6	0.1238465647477	0	1	2
## Wyatt	-1.34275738833	2	5	0.0649256906472	3	1	2
## Dylan	-26.88000103265	2	6	0.0353708662622	2	1	1
## Nathan	-39.79821175565	2	2	0.0888354857736	1	1	1
## Nicholas	34.26971267583	2	11	0.0250569961718	2	2	1
## Julian	9.36461669935	2	7	0.1796790042018	2	1	2
## Eli	47.51455185611	1	6	0.2033126784602	0	1	2
## Levi	102.23057565187	2	4	0.0080704995073	2	1	2
## Isaiah	5.02471173234	2	3	0.0890772014603	3	2	1
## Landon	16.22493257333	1	1	0.0653604517240	2	1	1

```
## David      40.76705592022      1      5 0.1437068663284      5      1      2
## Christian -42.64029252939      1     11 0.1403247263857      2      1      2
## Andrew    -25.73724611570      1      0 0.2173401971979      3      1      2
## Brayden   81.52136316067      1      6 0.1580702676862      2      2      2
## John      78.20272537547      1      9 0.0094382604067      3      1      2
## Lincoln   17.45809697212      2      9 0.1177862016944      2      1      1
```

- Print out a table of the binary variable. Then print out the proportions of “DOMESTIC” vs “FOREIGN”.

```
?table
x_col7 = factor(x_col7, labels = c("0", "1"))
table(x_col7)

## x_col7
##  0  1
## 49 51

table(x_str)

## x_str
## DOMESTIC FOREIGN
##      49      51

?rbinom
```

Print out a summary of the whole dataframe.

```
head(x) #make sure that worked

##           [,1] [,2] [,3]           [,4] [,5] [,6] [,7]
## Sophia    75.89457775673      2      7 0.0272337906580      1      1      1
## Emma      19.14325104781      1      6 0.2097148572312      3      1      1
## Olivia    -0.72397640238      2      8 0.1032043404624      3      1      2
## Ava        5.62768595955      1      4 0.0017296782817      4      1      2
## Mia       52.66225381068      2      2 0.0462309622413      3      1      2
## Isabella -64.58170424198      2      7 0.0051001045956      3      1      2

summary(x) #much better now!

##           V1           V2           V3           V4
## Min.      :-64.5817042 Min.      :1.00 Min.      : 0.00 Min.      :0.0017296783
## 1st Qu.: -7.0048965 1st Qu.:1.00 1st Qu.: 4.00 1st Qu.:0.0234236833
## Median : 19.7944038 Median :2.00 Median : 6.00 Median :0.0686497024
## Mean      : 21.3780446 Mean      :1.57 Mean      : 5.88 Mean      :0.1015358999
## 3rd Qu.: 44.0795682 3rd Qu.:2.00 3rd Qu.: 7.00 3rd Qu.:0.1440144297
## Max.      :119.5225446 Max.      :2.00 Max.      :13.00 Max.      :0.6528301619
##           V5           V6           V7
## Min.      :0.00 Min.      :1.00 Min.      :1.00
## 1st Qu.:2.00 1st Qu.:1.00 1st Qu.:1.00
## Median :2.50 Median :1.00 Median :2.00
## Mean      :2.58 Mean      :1.15 Mean      :1.51
```

```
## 3rd Qu.:3.25    3rd Qu.:1.00    3rd Qu.:2.00
## Max.      :7.00    Max.      :2.00    Max.      :2.00
```

- Let  $n = 50$ . Create a  $n \times n$  matrix  $R$  of exactly 50% entries 0's, 25% 1's 25% 2's. These values should be in random locations.

```
n=50
x_n = as.factor(sample(c(0,1,2),size = 2500, replace=TRUE,prob=c(0.5,
0.25,0.25)))
x=matrix(data = x_n,nrow=50,ncol=50,byrow=FALSE,dimnames = NULL)
x

##      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13]
## [1,] "2"  "1"  "0"  "1"  "0"  "2"  "1"  "1"  "0"  "2"  "2"  "2"  "0"
## [2,] "0"  "0"  "0"  "1"  "2"  "0"  "1"  "0"  "1"  "0"  "2"  "0"  "2"
## [3,] "2"  "2"  "2"  "0"  "2"  "1"  "1"  "1"  "0"  "0"  "1"  "2"  "1"
## [4,] "0"  "0"  "2"  "0"  "0"  "0"  "1"  "0"  "0"  "0"  "1"  "0"  "0"
## [5,] "2"  "0"  "1"  "1"  "0"  "1"  "0"  "0"  "2"  "0"  "0"  "1"  "1"
## [6,] "1"  "0"  "0"  "0"  "1"  "2"  "2"  "1"  "2"  "0"  "0"  "0"  "0"
## [7,] "0"  "2"  "0"  "0"  "0"  "0"  "1"  "0"  "1"  "2"  "0"  "0"  "2"
## [8,] "0"  "0"  "2"  "1"  "2"  "2"  "2"  "0"  "1"  "0"  "0"  "1"  "0"
## [9,] "0"  "0"  "1"  "0"  "2"  "2"  "2"  "0"  "2"  "0"  "0"  "2"  "1"
## [10,] "0"  "0"  "0"  "0"  "2"  "0"  "0"  "0"  "2"  "0"  "2"  "2"  "0"
## [11,] "1"  "0"  "2"  "0"  "2"  "1"  "2"  "2"  "0"  "1"  "0"  "2"  "2"
## [12,] "0"  "1"  "0"  "0"  "1"  "1"  "1"  "0"  "0"  "2"  "1"  "1"  "1"
## [13,] "0"  "0"  "1"  "1"  "2"  "2"  "1"  "0"  "1"  "2"  "1"  "0"  "0"
## [14,] "2"  "2"  "0"  "2"  "1"  "1"  "2"  "2"  "0"  "1"  "0"  "1"  "2"
## [15,] "1"  "0"  "1"  "0"  "2"  "0"  "0"  "0"  "2"  "1"  "0"  "1"  "0"
## [16,] "0"  "0"  "0"  "0"  "0"  "0"  "0"  "1"  "0"  "0"  "2"  "1"  "0"
## [17,] "1"  "2"  "2"  "0"  "1"  "0"  "2"  "1"  "0"  "1"  "0"  "2"  "1"
## [18,] "0"  "0"  "0"  "1"  "0"  "2"  "2"  "1"  "0"  "1"  "1"  "1"  "1"
## [19,] "1"  "2"  "0"  "0"  "2"  "0"  "0"  "2"  "2"  "0"  "2"  "0"  "1"
## [20,] "2"  "0"  "2"  "0"  "1"  "0"  "2"  "1"  "0"  "0"  "2"  "1"  "0"
## [21,] "0"  "0"  "1"  "2"  "0"  "1"  "1"  "1"  "0"  "0"  "1"  "1"  "0"
## [22,] "1"  "2"  "1"  "0"  "0"  "1"  "2"  "1"  "0"  "2"  "0"  "2"  "2"
## [23,] "1"  "2"  "2"  "2"  "1"  "1"  "0"  "0"  "2"  "1"  "2"  "1"  "0"
## [24,] "1"  "0"  "0"  "1"  "1"  "0"  "0"  "1"  "0"  "0"  "0"  "0"  "2"
## [25,] "1"  "2"  "1"  "1"  "0"  "0"  "0"  "1"  "2"  "1"  "0"  "1"  "1"
## [26,] "0"  "0"  "1"  "0"  "2"  "0"  "2"  "1"  "0"  "1"  "1"  "1"  "2"
## [27,] "2"  "1"  "1"  "2"  "0"  "0"  "2"  "2"  "0"  "2"  "1"  "0"  "1"
## [28,] "1"  "1"  "0"  "0"  "2"  "0"  "2"  "1"  "1"  "2"  "2"  "0"  "0"
## [29,] "0"  "1"  "2"  "0"  "0"  "2"  "0"  "0"  "1"  "0"  "2"  "2"  "0"
## [30,] "1"  "1"  "0"  "0"  "0"  "0"  "0"  "1"  "1"  "0"  "2"  "2"  "1"
## [31,] "1"  "1"  "2"  "0"  "0"  "0"  "1"  "2"  "2"  "2"  "2"  "0"  "0"
## [32,] "1"  "1"  "2"  "0"  "0"  "0"  "0"  "0"  "0"  "2"  "0"  "0"  "0"
## [33,] "2"  "0"  "1"  "1"  "1"  "1"  "0"  "0"  "0"  "2"  "0"  "0"  "0"
## [34,] "0"  "2"  "0"  "0"  "1"  "2"  "0"  "1"  "0"  "0"  "0"  "0"  "2"
## [35,] "2"  "1"  "0"  "2"  "1"  "1"  "2"  "0"  "0"  "2"  "2"  "1"  "0"
## [36,] "1"  "0"  "0"  "0"  "1"  "0"  "2"  "1"  "0"  "0"  "0"  "1"  "0"
## [37,] "0"  "0"  "1"  "1"  "1"  "0"  "2"  "2"  "1"  "1"  "2"  "0"  "0"
## [38,] "2"  "0"  "1"  "0"  "0"  "0"  "0"  "2"  "0"  "0"  "1"  "0"  "2"
```

```
## [39,] "0" "2" "1" "0" "2" "0" "2" "2" "0" "1" "0" "0" "1"
## [40,] "2" "0" "1" "1" "0" "0" "2" "0" "0" "0" "1" "0" "0"
## [41,] "1" "1" "0" "2" "1" "0" "0" "1" "0" "0" "0" "1" "0"
## [42,] "0" "0" "0" "2" "2" "0" "0" "0" "0" "0" "1" "2" "1"
## [43,] "0" "1" "0" "1" "1" "1" "2" "0" "2" "1" "2" "0" "0"
## [44,] "0" "1" "0" "0" "0" "0" "0" "1" "1" "0" "0" "0" "1"
## [45,] "1" "0" "1" "1" "1" "0" "0" "1" "1" "1" "0" "0" "0"
## [46,] "0" "0" "2" "0" "2" "1" "0" "0" "1" "1" "2" "0" "0"
## [47,] "1" "0" "1" "1" "0" "0" "1" "2" "2" "0" "2" "2" "1"
## [48,] "0" "0" "0" "0" "2" "0" "0" "1" "0" "0" "1" "2" "1"
## [49,] "0" "0" "0" "0" "0" "1" "0" "0" "0" "0" "0" "0" "0"
## [50,] "1" "1" "0" "2" "0" "2" "2" "2" "0" "2" "2" "0" "2"
##      [,14] [,15] [,16] [,17] [,18] [,19] [,20] [,21] [,22] [,23] [,24]
[,25]
## [1,] "2" "1" "0" "1" "0" "2" "0" "1" "0" "0" "0"
"0"
## [2,] "0" "0" "1" "0" "2" "0" "1" "1" "0" "2" "0"
"0"
## [3,] "0" "0" "2" "0" "1" "1" "0" "0" "1" "2" "2"
"0"
## [4,] "0" "1" "0" "0" "1" "0" "0" "2" "2" "2" "0"
"2"
## [5,] "0" "0" "1" "0" "0" "2" "0" "0" "2" "0" "2"
"1"
## [6,] "0" "1" "1" "0" "0" "1" "2" "0" "1" "0" "0"
"0"
## [7,] "1" "0" "2" "0" "2" "2" "1" "1" "0" "1" "0"
"0"
## [8,] "0" "0" "2" "1" "2" "1" "0" "0" "0" "0" "0"
"0"
## [9,] "0" "0" "1" "0" "0" "1" "2" "0" "0" "0" "2"
"2"
## [10,] "1" "0" "2" "0" "0" "0" "0" "0" "2" "1" "0"
"0"
## [11,] "2" "0" "1" "0" "2" "0" "0" "0" "0" "0" "0"
"0"
## [12,] "0" "0" "1" "2" "2" "2" "0" "0" "1" "2" "0"
"0"
## [13,] "2" "2" "0" "0" "1" "0" "0" "0" "0" "2" "1"
"0"
## [14,] "0" "1" "0" "0" "1" "0" "1" "0" "2" "2" "0"
"0"
## [15,] "2" "1" "0" "1" "0" "0" "2" "2" "2" "2" "0"
"2"
## [16,] "0" "0" "0" "0" "1" "2" "2" "2" "1" "0" "1"
"0"
## [17,] "0" "2" "2" "2" "1" "2" "2" "1" "0" "2" "1"
"0"
## [18,] "2" "2" "0" "1" "1" "0" "0" "1" "1" "2" "1"
"0"
```

## [19,] "2"	"2"	"0"	"1"	"0"	"2"	"0"	"0"	"1"	"0"	"0"	"2"
## [20,] "2"	"0"	"1"	"1"	"2"	"1"	"2"	"1"	"2"	"2"	"0"	"0"
## [21,] "2"	"2"	"2"	"1"	"2"	"1"	"0"	"0"	"2"	"1"	"0"	"1"
## [22,] "0"	"2"	"0"	"0"	"1"	"0"	"1"	"1"	"2"	"1"	"2"	"0"
## [23,] "1"	"0"	"1"	"0"	"0"	"0"	"1"	"0"	"0"	"0"	"1"	"0"
## [24,] "0"	"1"	"0"	"1"	"2"	"2"	"1"	"0"	"1"	"0"	"0"	"2"
## [25,] "0"	"2"	"1"	"1"	"2"	"0"	"0"	"1"	"2"	"1"	"0"	"0"
## [26,] "1"	"0"	"1"	"2"	"2"	"2"	"2"	"2"	"0"	"1"	"1"	"1"
## [27,] "2"	"2"	"0"	"1"	"0"	"0"	"1"	"0"	"2"	"0"	"2"	"2"
## [28,] "1"	"0"	"0"	"2"	"0"	"1"	"0"	"2"	"2"	"0"	"0"	"2"
## [29,] "2"	"0"	"2"	"0"	"0"	"2"	"0"	"1"	"0"	"0"	"2"	"0"
## [30,] "0"	"0"	"2"	"2"	"0"	"1"	"1"	"1"	"1"	"0"	"0"	"0"
## [31,] "1"	"0"	"0"	"0"	"0"	"2"	"2"	"0"	"0"	"1"	"2"	"1"
## [32,] "0"	"2"	"0"	"0"	"2"	"0"	"0"	"0"	"1"	"2"	"2"	"2"
## [33,] "2"	"0"	"2"	"2"	"0"	"1"	"0"	"2"	"0"	"2"	"2"	"0"
## [34,] "1"	"2"	"2"	"0"	"0"	"0"	"1"	"0"	"1"	"1"	"0"	"1"
## [35,] "0"	"1"	"0"	"0"	"2"	"0"	"0"	"0"	"2"	"1"	"0"	"1"
## [36,] "2"	"1"	"2"	"0"	"1"	"2"	"2"	"0"	"1"	"1"	"1"	"0"
## [37,] "1"	"2"	"1"	"1"	"0"	"2"	"1"	"0"	"1"	"0"	"0"	"2"
## [38,] "0"	"0"	"2"	"2"	"1"	"0"	"2"	"2"	"2"	"2"	"2"	"0"
## [39,] "1"	"0"	"2"	"0"	"0"	"1"	"0"	"0"	"0"	"2"	"2"	"2"
## [40,] "2"	"0"	"0"	"0"	"1"	"1"	"1"	"1"	"0"	"0"	"2"	"2"
## [41,] "1"	"1"	"0"	"0"	"0"	"0"	"0"	"1"	"0"	"1"	"0"	"0"
## [42,] "0"	"1"	"0"	"2"	"2"	"0"	"0"	"0"	"1"	"0"	"0"	"0"
## [43,] "0"	"0"	"0"	"0"	"0"	"0"	"0"	"0"	"2"	"2"	"0"	"1"



```

## [44,] "0" "0" "0" "0" "0" "1" "2" "0" "0" "0" "1"
"0"
## [45,] "0" "0" "0" "1" "1" "1" "0" "1" "0" "2" "2"
"0"
## [46,] "0" "0" "0" "2" "0" "1" "0" "0" "1" "1" "0"
"1"
## [47,] "1" "0" "2" "2" "1" "0" "2" "0" "0" "1" "1"
"0"
## [48,] "0" "1" "0" "0" "0" "2" "0" "2" "0" "0" "1"
"2"
## [49,] "2" "2" "0" "0" "0" "1" "1" "1" "0" "2" "2"
"0"
## [50,] "0" "1" "0" "0" "0" "0" "2" "1" "1" "1" "2"
"2"
##      [,26] [,27] [,28] [,29] [,30] [,31] [,32] [,33] [,34] [,35] [,36]
[,37]
## [1,] "2" "0" "2" "1" "2" "0" "0" "0" "0" "1" "0"
"1"
## [2,] "0" "1" "1" "1" "1" "0" "2" "0" "0" "2" "0"
"0"
## [3,] "1" "1" "2" "0" "0" "0" "1" "0" "0" "0" "0"
"1"
## [4,] "2" "0" "0" "2" "2" "2" "2" "1" "2" "2" "1"
"1"
## [5,] "2" "0" "0" "0" "0" "1" "0" "0" "2" "2" "2"
"2"
## [6,] "2" "0" "0" "0" "0" "1" "2" "0" "0" "1" "0"
"0"
## [7,] "0" "1" "2" "2" "0" "0" "0" "1" "2" "0" "0"
"0"
## [8,] "0" "1" "0" "0" "0" "2" "2" "2" "0" "2" "0"
"2"
## [9,] "0" "0" "2" "0" "0" "0" "2" "0" "0" "1" "1"
"0"
## [10,] "0" "2" "1" "1" "1" "2" "0" "2" "0" "1" "1"
"0"
## [11,] "2" "2" "2" "2" "1" "1" "0" "2" "2" "1" "0"
"0"
## [12,] "0" "0" "0" "1" "1" "1" "0" "1" "0" "2" "2"
"2"
## [13,] "0" "0" "0" "1" "0" "0" "1" "1" "0" "2" "2"
"0"
## [14,] "0" "0" "0" "1" "2" "0" "2" "0" "1" "2" "1"
"0"
## [15,] "2" "0" "1" "0" "0" "1" "1" "2" "0" "0" "0"
"0"
## [16,] "1" "0" "0" "1" "2" "1" "2" "0" "0" "0" "0"
"0"
## [17,] "0" "0" "0" "0" "0" "0" "2" "0" "0" "0" "2"
"2"

```

## [18,] "2"	"2"	"2"	"1"	"0"	"0"	"0"	"2"	"0"	"0"	"1"	"0"
## [19,] "0"	"0"	"1"	"2"	"0"	"0"	"0"	"1"	"2"	"0"	"0"	"2"
## [20,] "2"	"0"	"0"	"1"	"0"	"0"	"1"	"2"	"0"	"2"	"0"	"0"
## [21,] "0"	"2"	"2"	"0"	"0"	"0"	"0"	"1"	"2"	"0"	"2"	"0"
## [22,] "0"	"0"	"1"	"1"	"1"	"2"	"0"	"1"	"1"	"0"	"1"	"1"
## [23,] "0"	"0"	"0"	"1"	"1"	"0"	"1"	"1"	"2"	"0"	"0"	"2"
## [24,] "0"	"2"	"0"	"0"	"0"	"1"	"2"	"2"	"2"	"0"	"0"	"0"
## [25,] "2"	"0"	"2"	"0"	"0"	"0"	"0"	"1"	"0"	"1"	"2"	"2"
## [26,] "2"	"1"	"0"	"0"	"0"	"1"	"0"	"1"	"0"	"0"	"2"	"1"
## [27,] "2"	"1"	"2"	"2"	"0"	"0"	"0"	"0"	"2"	"0"	"2"	"1"
## [28,] "0"	"0"	"1"	"0"	"2"	"0"	"0"	"0"	"1"	"0"	"1"	"2"
## [29,] "1"	"1"	"2"	"0"	"2"	"2"	"1"	"0"	"0"	"0"	"0"	"0"
## [30,] "2"	"0"	"0"	"0"	"1"	"2"	"0"	"0"	"0"	"2"	"1"	"0"
## [31,] "1"	"2"	"0"	"2"	"0"	"2"	"0"	"2"	"0"	"0"	"1"	"1"
## [32,] "2"	"0"	"0"	"0"	"0"	"1"	"1"	"0"	"1"	"0"	"2"	"2"
## [33,] "0"	"2"	"2"	"0"	"0"	"2"	"0"	"0"	"2"	"0"	"0"	"0"
## [34,] "2"	"0"	"0"	"2"	"0"	"0"	"1"	"0"	"0"	"0"	"1"	"1"
## [35,] "1"	"0"	"0"	"0"	"0"	"0"	"2"	"0"	"2"	"1"	"0"	"0"
## [36,] "2"	"2"	"2"	"0"	"0"	"1"	"0"	"2"	"0"	"2"	"1"	"0"
## [37,] "0"	"2"	"2"	"0"	"0"	"2"	"1"	"0"	"2"	"0"	"0"	"0"
## [38,] "0"	"0"	"2"	"1"	"2"	"0"	"0"	"0"	"1"	"0"	"1"	"0"
## [39,] "0"	"1"	"2"	"0"	"0"	"0"	"0"	"0"	"1"	"0"	"0"	"0"
## [40,] "2"	"1"	"1"	"2"	"0"	"0"	"0"	"0"	"0"	"2"	"0"	"0"
## [41,] "0"	"1"	"0"	"2"	"2"	"2"	"2"	"0"	"1"	"2"	"1"	"0"
## [42,] "2"	"1"	"1"	"0"	"0"	"1"	"0"	"1"	"0"	"0"	"1"	"1"

```

## [43,] "1" "0" "1" "0" "0" "0" "1" "1" "0" "1" "1"
"0"
## [44,] "0" "0" "1" "2" "2" "1" "2" "1" "0" "0" "2"
"2"
## [45,] "1" "0" "2" "0" "2" "1" "0" "0" "1" "1" "0"
"2"
## [46,] "0" "2" "0" "0" "1" "2" "2" "1" "1" "2" "0"
"0"
## [47,] "0" "0" "2" "1" "0" "1" "0" "0" "2" "0" "1"
"2"
## [48,] "1" "0" "2" "0" "1" "0" "1" "0" "1" "2" "1"
"1"
## [49,] "1" "0" "1" "2" "1" "1" "1" "0" "0" "2" "0"
"2"
## [50,] "1" "0" "0" "1" "0" "2" "1" "0" "0" "2" "0"
"1"
##      [,38] [,39] [,40] [,41] [,42] [,43] [,44] [,45] [,46] [,47] [,48]
[,49]
## [1,] "0" "0" "2" "0" "1" "2" "0" "2" "0" "1" "2"
"0"
## [2,] "2" "1" "0" "1" "0" "1" "0" "1" "0" "0" "1"
"1"
## [3,] "1" "0" "0" "2" "0" "0" "0" "2" "2" "2" "0"
"1"
## [4,] "0" "1" "2" "0" "1" "0" "2" "1" "1" "1" "2"
"1"
## [5,] "0" "0" "0" "0" "0" "2" "2" "1" "2" "0" "1"
"0"
## [6,] "2" "0" "0" "0" "0" "0" "2" "1" "1" "1" "2"
"2"
## [7,] "1" "0" "1" "0" "2" "0" "0" "0" "0" "2" "2"
"2"
## [8,] "2" "0" "0" "1" "1" "2" "0" "1" "0" "2" "0"
"1"
## [9,] "2" "2" "0" "1" "0" "0" "2" "1" "1" "0" "0"
"1"
## [10,] "1" "1" "0" "2" "0" "1" "1" "0" "2" "0" "2"
"0"
## [11,] "2" "1" "0" "1" "0" "2" "1" "0" "1" "0" "2"
"0"
## [12,] "2" "0" "0" "2" "0" "0" "0" "0" "0" "0" "1"
"0"
## [13,] "2" "1" "0" "2" "0" "0" "2" "0" "2" "0" "2"
"1"
## [14,] "1" "1" "2" "0" "0" "2" "2" "2" "0" "0" "0"
"2"
## [15,] "0" "2" "0" "0" "0" "0" "2" "1" "1" "0" "1"
"1"
## [16,] "0" "1" "0" "1" "1" "0" "2" "2" "2" "0" "1"
"2"

```

[illegible]

```
## [42,] "1" "0" "2" "0" "0" "0" "1" "0" "0" "2" "0"
"0"
## [43,] "2" "0" "1" "2" "0" "1" "0" "0" "1" "1" "2"
"0"
## [44,] "0" "0" "0" "0" "1" "2" "2" "0" "1" "0" "2"
"2"
## [45,] "2" "0" "1" "2" "2" "0" "2" "1" "2" "2" "1"
"0"
## [46,] "1" "2" "2" "2" "0" "0" "2" "1" "0" "1" "0"
"0"
## [47,] "2" "0" "1" "0" "1" "0" "0" "1" "1" "0" "2"
"0"
## [48,] "2" "0" "0" "0" "1" "0" "2" "1" "1" "1" "2"
"0"
## [49,] "0" "1" "0" "0" "0" "2" "0" "0" "2" "2" "0"
"2"
## [50,] "1" "0" "0" "0" "2" "2" "2" "0" "0" "1" "0"
"1"
##      [,50]
## [1,] "0"
## [2,] "2"
## [3,] "2"
## [4,] "0"
## [5,] "1"
## [6,] "0"
## [7,] "2"
## [8,] "2"
## [9,] "1"
## [10,] "0"
## [11,] "0"
## [12,] "0"
## [13,] "1"
## [14,] "0"
## [15,] "0"
## [16,] "0"
## [17,] "0"
## [18,] "0"
## [19,] "0"
## [20,] "2"
## [21,] "1"
## [22,] "0"
## [23,] "1"
## [24,] "0"
## [25,] "1"
## [26,] "1"
## [27,] "0"
## [28,] "2"
## [29,] "0"
## [30,] "2"
## [31,] "0"
```

```
## [32,] "1"
## [33,] "2"
## [34,] "2"
## [35,] "0"
## [36,] "2"
## [37,] "0"
## [38,] "0"
## [39,] "2"
## [40,] "0"
## [41,] "0"
## [42,] "0"
## [43,] "1"
## [44,] "1"
## [45,] "1"
## [46,] "0"
## [47,] "0"
## [48,] "0"
## [49,] "0"
## [50,] "2"
```

- Randomly punch holes (i.e. NA) values in this matrix so that an each entry is missing with probability 30%.

```
n = 100
x = matrix(rnorm(n^2), nrow = n, ncol = n)
for (i in 1 : n){
  for (j in 1 : n){
    if (runif(1) < 0.3){
      x[i,j] = NA
    }
  }
}
?runif
x
```

```
##           [,1]           [,2]           [,3]           [,4]
## [1,]          NA  0.5479886422985          NA          NA
## [2,] -0.190466661376  0.4454802513078  0.8903564734992  1.11926295014
## [3,] -0.008369068894 -0.0465005983872 -1.2311454629116  0.82175941988
## [4,] -0.445981502938  0.5702572666687          NA -0.61915166431
## [5,]  0.214607918868 -0.0478414077388          NA  0.99167424805
## [6,]  0.010264598804          NA -0.0159651500938  0.24792339836
## [7,] -1.310051345603  0.9713628896210          NA -1.20186654523
## [8,]  1.024226323451  1.5909134808362          NA          NA
## [9,] -0.895793445009 -0.8065058322158          NA          NA
## [10,]          NA  0.1553774582275          NA  0.59494414581
## [11,] -0.216869288712 -0.1942862120260 -0.2785502324545  0.87404254270
## [12,] -0.640494171786 -0.3677942699504          NA -1.64502312317
## [13,] -2.414732102450 -0.2875655662008 -0.5493637839439 -0.93583309659
## [14,]          NA  0.2405458378618 -0.7034164962790 -0.75125060438
## [15,] -1.315767645424 -1.8533656171640          NA  0.12174370506
```

##	[16,]	NA	-1.3194610459584	NA	-1.22811370549
##	[17,]	NA	NA	NA	-0.65376019611
##	[18,]	-0.356359462147	0.3977716791357	NA	1.53669865408
##	[19,]	NA	1.6387895521433	NA	NA
##	[20,]	0.353142824808	1.0963462085972	NA	-0.95480731340
##	[21,]	NA	-0.4244602835840	NA	-0.53227437128
##	[22,]	-0.527128438695	-1.2058381372817	0.1085008266424	NA
##	[23,]	0.858277724985	-1.7334914375604	-0.3416355529567	-2.41980986247
##	[24,]	1.288231478678	-0.4105893770097	0.1196347647361	0.72545228902
##	[25,]	-0.990344673003	-1.7990969980155	NA	-0.45866471700
##	[26,]	-1.264751022747	NA	NA	1.93348360312
##	[27,]	0.559738490195	NA	0.7442736403681	NA
##	[28,]	-0.124468363363	1.1310261904300	-0.1177678341010	0.51456121822
##	[29,]	-0.600816956878	0.7237030298826	-0.2707979539004	0.85634114509
##	[30,]	NA	0.5876427644125	-0.0569800087295	0.71345202659
##	[31,]	-1.610314562841	1.6423682219892	1.8535874964267	0.19045062414
##	[32,]	0.221084564617	NA	0.6646186175614	NA
##	[33,]	-0.158850020577	-1.5440010475044	NA	NA
##	[34,]	NA	-0.1698378140554	0.0281870023515	1.42872894302
##	[35,]	1.099732298452	0.4910164446768	-1.0080161745388	0.69830432271
##	[36,]	NA	0.3602917008772	-2.2371989591190	-0.11383398865
##	[37,]	NA	0.9388230361663	1.1947406535560	0.41478711909
##	[38,]	NA	-0.2436920404633	0.8040664238235	-0.91427508320
##	[39,]	NA	NA	-0.0095317157018	0.24311815520
##	[40,]	-1.052467046924	0.6868748657537	-1.4649864296393	NA
##	[41,]	NA	-0.9917759966307	0.2566451524436	-0.21890544462
##	[42,]	-0.533333878144	0.8574747554296	0.8720937760883	0.45678315569
##	[43,]	NA	NA	0.6819672216505	0.62025025476
##	[44,]	-1.655168629651	NA	0.8771550578247	-1.26150803500
##	[45,]	NA	0.4144986491142	1.3539267189093	-0.97222584474
##	[46,]	NA	NA	NA	-0.73242314806
##	[47,]	NA	0.4983252838811	0.1775694958698	0.11420280570
##	[48,]	0.112877112401	1.3057533457171	NA	0.24122789520
##	[49,]	-2.071319435145	NA	0.5641488005483	-1.18068345702
##	[50,]	-0.521802908313	0.6920718877185	-1.2174174362930	-0.16323704786
##	[51,]	NA	-0.7307337817995	-0.3770526943606	1.13676437605
##	[52,]	NA	NA	0.3922132081582	1.33875411604
##	[53,]	-0.522298384767	NA	NA	1.15867297690
##	[54,]	NA	-1.1760009905179	-0.6521477481698	NA
##	[55,]	0.523676020365	-0.4299509880546	-1.1085256369835	0.21851799446
##	[56,]	0.142353861525	-0.7140949352457	NA	NA
##	[57,]	NA	-0.0386902023053	-0.0965278924310	-0.12612163941
##	[58,]	NA	-0.7583141241864	-1.1729432357757	1.43970574351
##	[59,]	0.422398730037	0.3203084765930	0.7708745160620	-0.79669395490
##	[60,]	0.437336867505	0.0027765444367	-0.8889088688666	1.13468682152
##	[61,]	NA	-1.5509373310781	-0.7826325677815	0.82861801610
##	[62,]	NA	0.2842500087350	NA	-0.53984350729
##	[63,]	NA	1.2868933890309	0.1054459577595	0.43779903661
##	[64,]	-0.481394826813	NA	0.1444618644896	NA
##	[65,]	NA	-0.3403393590217	-0.3510453800306	-2.80766206280

##	[66,]	-0.550451267855	NA	1.5180104269603	0.25411549291
##	[67,]	1.473647592861	-0.3368444290490	-0.2696251875846	-0.22303303309
##	[68,]	0.371934974730	-0.4071909824605	NA	-0.12730418419
##	[69,]	-1.241165117782	0.7296097777680	0.4710540988709	-1.44753096068
##	[70,]	0.143607698546	0.7818784266950	NA	-0.92080201010
##	[71,]	-0.777742098750	NA	0.9574406775697	NA
##	[72,]	-0.201938693679	NA	-1.1298706403701	0.30436429891
##	[73,]	-0.959385266592	-0.1502896499985	-2.1403672514561	0.87784055787
##	[74,]	NA	-0.3011958071197	NA	-0.41541216897
##	[75,]	-0.212555612779	-0.6113496275518	-1.1270670103158	NA
##	[76,]	NA	0.2189282232355	-1.4403731964534	0.42883799030
##	[77,]	NA	0.0828367200701	0.5015981118084	0.70846678285
##	[78,]	-1.090279151215	-1.0515118045506	NA	NA
##	[79,]	1.728239150553	NA	0.4564124817436	0.74249523829
##	[80,]	-0.495424146875	NA	-1.3403456475904	0.92902071091
##	[81,]	0.958210882845	-1.1400219669527	NA	NA
##	[82,]	-0.431634785945	-0.2443505053434	NA	-0.69445526982
##	[83,]	-1.140378533435	0.5882866412862	1.6096442282223	-0.15916548181
##	[84,]	-0.709024398685	0.9607543826125	NA	0.37661211808
##	[85,]	-0.281206632212	NA	1.7241971048930	0.58817233185
##	[86,]	NA	-0.3800047778506	NA	-0.36463349668
##	[87,]	0.350161817383	-0.0409818380007	-0.8412885816019	NA
##	[88,]	-1.356024582064	NA	-0.2725881312144	-0.57964619705
##	[89,]	0.193776977599	NA	NA	1.52547938093
##	[90,]	-0.247470334151	-0.0160460262790	0.3564582495581	1.07062049205
##	[91,]	0.304247182661	-0.0203413548171	1.8514511169193	NA
##	[92,]	-0.111452467135	-1.5096623251674	-0.3899580006378	0.28342920576
##	[93,]	-0.914540491454	-0.3759629249817	0.6187083498271	NA
##	[94,]	-0.464905425279	NA	NA	0.12267105231
##	[95,]	-0.214142525456	-1.1946716225341	-0.7743698293793	0.51288602251
##	[96,]	1.705962067532	-1.4506601983164	NA	-1.82513876265
##	[97,]	NA	-0.8312359575590	-0.5872180181656	0.70000057686
##	[98,]	NA	0.5552241351505	NA	1.17291757228
##	[99,]	-0.104034879131	0.1753559620179	-0.0637980651287	-0.75165607326
##	[100,]	-0.342698893421	-0.4038358463537	-0.5005671793836	0.37848505780
##		[,5]	[,6]	[,7]	[,8]
##	[1,]	NA	NA	-0.6594532772608	-1.1392065639373
##	[2,]	2.516394975300	NA	-0.5267865190125	-1.0081080413953
##	[3,]	-0.389236448327	-0.499441456634	NA	-1.0591596918863
##	[4,]	-1.390415927072	1.308405771692	0.1975050324580	-0.8835633293307
##	[5,]	-1.497925266491	0.341643431866	NA	1.0857836473567
##	[6,]	-0.208812700948	-0.462567546738	-0.2158560288628	NA
##	[7,]	NA	NA	1.3204119118683	-0.1839417449613
##	[8,]	0.815254596074	0.701939107374	-0.0562679454305	NA
##	[9,]	NA	NA	1.5862033344047	1.6973388193595
##	[10,]	NA	-0.918705250729	-0.9475904729625	0.0035253514783
##	[11,]	-0.237038646361	1.766013748817	0.0848881271895	0.1221574193602
##	[12,]	NA	NA	-1.1940563640201	-0.2694816066896
##	[13,]	NA	NA	1.9800104517115	0.8886210310641
##	[14,]	0.123062635432	-0.717068632671	-0.0828249406020	-0.1264738945068



##	[15,]	0.587185180643	0.160578770738	-0.3199105674057	NA
##	[16,]	NA	-1.650052783947	0.9977089620939	0.7914997204303
##	[17,]	-0.721659783146	-0.156030741245	-2.5137143106906	0.0494357266241
##	[18,]	NA	NA	NA	NA
##	[19,]	-0.083491789569	0.133462083459	NA	0.0985182149520
##	[20,]	0.926270894364	NA	NA	-0.9239476730481
##	[21,]	0.722461749896	-0.392104225563	-0.3051400422812	NA
##	[22,]	-0.080192729888	-0.554170765505	-0.1616437152624	NA
##	[23,]	0.617232534404	-1.182977817475	NA	-0.4268270562411
##	[24,]	0.672074458920	-0.800638230781	NA	NA
##	[25,]	NA	NA	NA	1.5616248008419
##	[26,]	1.817769988190	0.044303110047	NA	NA
##	[27,]	-0.927127054871	1.376968130318	NA	0.0553055355354
##	[28,]	NA	0.525989209248	-0.0721065517130	0.4109115810312
##	[29,]	-1.859163923080	0.461615881333	-0.4244120368839	2.7501063856812
##	[30,]	NA	NA	0.2210078041211	0.7531313813358
##	[31,]	NA	0.780158485598	-0.4164091209280	-0.8129915875967
##	[32,]	0.474324534649	0.636877855976	NA	NA
##	[33,]	-1.075523724312	NA	NA	-0.9398945122214
##	[34,]	0.124394655040	-0.334409486736	-0.9821896882371	NA
##	[35,]	NA	NA	NA	0.6371687557185
##	[36,]	0.544644166858	0.147606162056	-0.2117243641466	0.0563990362275
##	[37,]	-0.339463794374	-1.206127725820	-0.8811678255846	1.2818349064412
##	[38,]	-0.366014751042	NA	-0.8939964054313	NA
##	[39,]	0.320603212346	0.429145327355	-0.5131631300923	NA
##	[40,]	-0.490777808828	-1.512029006364	0.6792230402454	0.2223533909143
##	[41,]	0.444192213433	NA	NA	NA
##	[42,]	NA	0.120840278442	-1.4824222045857	NA
##	[43,]	-0.566421853734	0.633517863781	-0.3550883776485	NA
##	[44,]	-1.245348024867	1.197489210466	-0.1071636035132	1.4071498659118
##	[45,]	0.717902174164	0.224294921117	-0.9098420451326	0.8996243136068
##	[46,]	NA	0.336388067892	-0.2438111352327	-0.6961903489980
##	[47,]	0.472672076440	NA	NA	-1.2777703051379
##	[48,]	-1.326767534674	0.529888211138	0.2695460963305	1.1262802668518
##	[49,]	-0.451728325514	0.419394564582	-1.4786480918929	-0.8045968293449
##	[50,]	0.050085079136	NA	0.4785274071498	2.1170531040738
##	[51,]	-0.071700871901	NA	0.2838057476563	-0.9405678790928
##	[52,]	0.478173639378	1.675420372778	NA	NA
##	[53,]	0.881066427905	NA	-1.5362017363042	1.2974245971641
##	[54,]	NA	-1.679391107962	1.4774207216973	NA
##	[55,]	1.938038461759	NA	-0.6554267208153	NA
##	[56,]	NA	NA	NA	NA
##	[57,]	-0.106060268935	-1.355737722067	NA	-0.5766554824775
##	[58,]	-0.700296886056	1.630349874135	-1.3186464931916	-0.3843787843649
##	[59,]	0.225955259595	-1.568733083776	-1.0514704660795	-2.3307060435135
##	[60,]	-0.418822051529	0.999703664356	-0.5141398328179	1.1636125236676
##	[61,]	1.881124951155	-0.462314945569	NA	-0.8537746828614
##	[62,]	NA	-2.347704449834	NA	-1.1099267804987
##	[63,]	-0.019934956798	NA	0.3120293906196	1.0693165390258
##	[64,]	NA	-0.444393752353	-0.5409154372595	0.4351653134173

##	[65,]	-0.837393697324	-0.771969144424	-0.4186427650684	2.0123790333441
##	[66,]	0.549122035535	NA	0.4638093048894	-2.6518759159985
##	[67,]	-0.472771248588	-0.406498518986	0.5647779407838	NA
##	[68,]	NA	0.791484670227	0.4676076273681	-0.6368854616150
##	[69,]	1.866933300565	-0.280595179598	NA	-0.1962764283342
##	[70,]	0.863991061575	-0.979830844998	NA	1.2004925017171
##	[71,]	-0.078697828794	0.490276258300	1.1566904357835	2.0766708497145
##	[72,]	-0.985101257168	-0.756639739520	-0.9797193029073	NA
##	[73,]	NA	-0.356317407804	-0.7264165604492	-1.0164558356561
##	[74,]	2.205710080442	0.719204783767	NA	-0.3502583039739
##	[75,]	-0.242544217834	0.497857175783	0.7695662039248	0.3119420983056
##	[76,]	0.334303796389	-0.190532632045	1.9364011279271	2.1431309693847
##	[77,]	-0.170514850155	NA	NA	-1.6295106511054
##	[78,]	NA	NA	-0.5297187794325	NA
##	[79,]	-0.071479743531	NA	NA	-0.9802900279498
##	[80,]	0.131771273638	-1.642506133578	-0.0970484654586	-1.2586371160340
##	[81,]	-0.477360340090	NA	NA	NA
##	[82,]	1.244898507016	-0.096412060148	NA	0.3139417704872
##	[83,]	0.277576947910	-0.451813307139	0.8184258827257	-0.3168120361275
##	[84,]	0.140611069691	0.041544596525	NA	-1.7517472991490
##	[85,]	-0.063942506130	NA	NA	0.9862996487049
##	[86,]	NA	NA	0.8218029569888	0.0682884187244
##	[87,]	NA	1.013078436150	NA	NA
##	[88,]	-1.489109558727	0.553533604524	NA	NA
##	[89,]	0.214895468282	0.530040609400	-0.5013610106434	0.3713943037505
##	[90,]	NA	-1.494628309371	-0.7559604618493	-0.7111933842837
##	[91,]	1.903368897218	-0.707446410125	0.5721162377140	1.2915928732387
##	[92,]	NA	-0.394851072211	-1.5595001063520	NA
##	[93,]	NA	NA	0.0037002182739	-1.0395289811231
##	[94,]	-1.313022761579	0.496348325228	-0.3131072471761	1.0181788436489
##	[95,]	1.912218306815	0.424809700337	NA	NA
##	[96,]	0.456025652802	0.383086652471	0.1511263894513	-0.4613228472394
##	[97,]	-2.250581521652	NA	0.5052319584301	NA
##	[98,]	-0.943484996178	0.126125152802	-0.5168971752525	NA
##	[99,]	0.832696676230	-0.488050121960	-2.7220355391367	-1.0867312679761
##	[100,]	-1.305706731403	0.316406307221	-1.5756410027822	-0.4694935597523
##		[,9]	[,10]	[,11]	[,12]
##	[1,]	-0.0076269587884	NA	1.328025357107	NA
##	[2,]	0.2051235540817	0.198347567437	0.720168091549	0.5395311386615
##	[3,]	-0.0984747531536	-1.264919838958	0.177023969300	NA
##	[4,]	0.7184772458227	0.071152508379	0.244765344474	1.4793059279283
##	[5,]	1.8275743180575	NA	0.042757770004	NA
##	[6,]	NA	0.432885139671	0.103029982413	NA
##	[7,]	NA	NA	NA	0.9228908421505
##	[8,]	-1.6084200585646	-0.827106902018	0.258841821165	-0.3933831912222
##	[9,]	-0.3682200049948	-0.322532311789	NA	0.0816185368285
##	[10,]	1.0032917753669	NA	NA	0.7445869209110
##	[11,]	0.3719133550053	0.266929009927	-1.281790037787	-0.1844514272753
##	[12,]	-1.2995725063625	-0.678676441432	1.382478677554	-2.1610977599203
##	[13,]	1.5102486526243	-0.010491668591	-0.741724985560	-1.6774691518822

##	[14,]	NA	0.408619528384	0.521946997374	0.0023425149997
##	[15,]	0.1163094365683	NA	0.881384532790	0.7394261359569
##	[16,]	-1.2395540482087	-0.999106717766	1.553202050997	-1.4362565093659
##	[17,]	-0.1010829369540	0.201348894169	1.268804999005	0.0897251557269
##	[18,]	NA	0.476461728395	NA	1.4467833719617
##	[19,]	0.9722312989188	NA	1.224723579589	-1.0649684062638
##	[20,]	-0.7198901419592	NA	NA	NA
##	[21,]	-0.3517757535453	0.199475664312	-0.374604004580	NA
##	[22,]	NA	NA	-0.103917570672	NA
##	[23,]	-0.7384725661147	-0.465832233913	-0.205451899669	NA
##	[24,]	1.6638814635594	NA	0.242502037417	NA
##	[25,]	-0.1384769497134	2.249700942998	-0.430774302426	-0.6778541690825
##	[26,]	NA	NA	0.217766619687	NA
##	[27,]	NA	-0.453058258538	0.820107022401	0.6932144872803
##	[28,]	-0.5989519142986	0.146655260982	-0.954855010357	NA
##	[29,]	0.8348360877178	NA	NA	1.5348831283349
##	[30,]	-0.0224901437229	1.697929686246	-0.446975403070	0.2089001186426
##	[31,]	0.0599225695949	-0.231480590495	1.070364876734	-0.5648829402580
##	[32,]	-0.5519006775750	0.702729068850	NA	NA
##	[33,]	0.1002615796880	0.040483064840	NA	NA
##	[34,]	-0.6458742260199	NA	1.161744160969	NA
##	[35,]	0.5752149665619	NA	NA	-1.1628887544076
##	[36,]	NA	-0.730337670253	NA	-1.5298177376470
##	[37,]	1.1064224844212	-0.211140267668	-0.266605880052	1.3132689317414
##	[38,]	NA	NA	-0.949943287150	-0.6903803876047
##	[39,]	0.7499821264948	2.250319325209	NA	NA
##	[40,]	-0.1836563996275	-0.374197292208	0.374330326917	0.5877383683465
##	[41,]	-1.7907957072112	-0.896983577264	NA	NA
##	[42,]	NA	-2.456578820590	0.971526104019	0.5053436886299
##	[43,]	NA	NA	0.185617961872	0.8170514452179
##	[44,]	NA	-1.057373256079	-0.566116332437	NA
##	[45,]	0.5271436943356	0.684005424845	1.069252283316	NA
##	[46,]	1.8121898163274	NA	0.010780188238	-0.6504323895083
##	[47,]	NA	NA	-0.534254298854	1.0672535435942
##	[48,]	-0.0366921266885	-2.028451150829	-0.809329569838	0.1369566944266
##	[49,]	-0.5960547797131	NA	-0.069642531328	NA
##	[50,]	1.2829843347082	0.775889141589	0.962698496595	NA
##	[51,]	-0.3421178500882	0.296054533199	1.659505678562	NA
##	[52,]	NA	NA	1.403778087958	0.2270195676752
##	[53,]	-1.3361769640777	NA	NA	0.8185851855987
##	[54,]	NA	NA	-0.669066503988	-0.7606927594172
##	[55,]	NA	-0.090080014168	0.188334767920	0.1576392619774
##	[56,]	-0.4006249183497	-1.272370615012	-1.245982995350	-0.0653944768955
##	[57,]	NA	NA	-0.602016391247	-0.7166483887134
##	[58,]	-1.7164756970115	NA	NA	NA
##	[59,]	0.8487432548645	NA	NA	-0.1222455447560
##	[60,]	NA	NA	-1.437452638337	NA
##	[61,]	0.2497236337596	-0.096334377031	-0.269022900804	NA
##	[62,]	0.5294913774930	NA	-0.810120307532	0.2470802723670
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##	[64,]	NA	NA	NA	0.0606393635419
##	[65,]	0.1019294622831	NA	-0.157759940000	NA
##	[66,]	-0.2932744257289	NA	0.380895086608	-0.1093026702314
##	[67,]	0.2949293189020	NA	1.913532070763	0.2431847296138
##	[68,]	1.5105731296287	0.544741769154	-1.391682571864	NA
##	[69,]	NA	NA	NA	0.9850444765951
##	[70,]	-0.7456015378118	NA	1.205437148173	0.7398597936115
##	[71,]	0.2676518356394	-0.489317857913	0.298081060114	-0.1867384616155
##	[72,]	NA	-1.280236730920	NA	NA
##	[73,]	-1.3221868076058	0.899588092849	0.968921059413	NA
##	[74,]	NA	0.200425385984	-0.564862491688	-0.0718754900474
##	[75,]	-0.7115185705981	0.016706949873	-0.898201269948	NA
##	[76,]	NA	-0.610335547968	NA	0.4384040902281
##	[77,]	NA	0.172685212285	NA	NA
##	[78,]	NA	NA	NA	NA
##	[79,]	2.4759214999420	NA	0.065881351157	NA
##	[80,]	0.6109495085100	1.251328938336	0.750884829333	0.0763280311758
##	[81,]	1.9707773771173	-1.916712269676	0.436825366321	0.7815775825010
##	[82,]	0.0434403176004	0.119823099668	-0.762399239286	NA
##	[83,]	1.0366743680334	NA	NA	NA
##	[84,]	NA	NA	-0.195820261998	NA
##	[85,]	NA	-0.117225738313	NA	0.3355008331836
##	[86,]	-0.2776004610994	-0.643306117707	-0.034514611164	0.9177549280061
##	[87,]	0.2708000463715	NA	-1.342177982392	-1.3544119360634
##	[88,]	0.2418081643121	-1.948466810262	-1.435681200093	NA
##	[89,]	-0.1395982561690	NA	0.533339435500	NA
##	[90,]	0.9894451252053	0.506011835786	0.929279251345	-0.3747570738298
##	[91,]	-1.4512141586556	0.319383856577	NA	0.7432661937882
##	[92,]	0.9645329982396	0.477475944521	0.819482658074	NA
##	[93,]	NA	0.252400540652	-0.718109036915	-0.2832036658926
##	[94,]	-0.9042310950159	-0.303975011869	-0.822236729888	-1.2799851959764
##	[95,]	NA	NA	-1.321633430878	NA
##	[96,]	-2.4378298204911	0.754262107450	-0.675334906941	2.8249881682871
##	[97,]	1.3776503542522	0.884237309416	-0.273082521685	NA
##	[98,]	NA	NA	NA	0.0796983758885
##	[99,]	NA	NA	0.937348682663	NA
##	[100,]	NA	NA	0.124730671752	1.3262117349421
##		[,13]	[,14]	[,15]	[,16]
##	[1,]	NA	NA	0.3923354576627	2.757461033155
##	[2,]	0.608610104988	NA	NA	1.305560261858
##	[3,]	NA	1.120488977111	NA	NA
##	[4,]	NA	1.357126624118	NA	-1.062129623635
##	[5,]	-0.817765035841	-1.661308864126	1.3977673131883	NA
##	[6,]	-0.278149827049	NA	-0.1847361708487	0.018911990211
##	[7,]	NA	-1.110612878817	NA	1.752248358773
##	[8,]	0.412387323698	NA	NA	0.446917526079
##	[9,]	1.230880137047	NA	2.3434761015150	-0.190582554447
##	[10,]	-1.422506854440	-0.034619462888	0.3697917648238	NA
##	[11,]	-1.929949801859	NA	-1.1739484459788	NA
##	[12,]	0.013105185033	-0.264419084435	0.6398378370021	NA

##	[13,]	NA	-1.590697602990	-0.3830543895989	0.102344072493
##	[14,]	-1.024267568230	NA	-0.4693339611982	-0.210884968326
##	[15,]	-0.401668943096	NA	0.8334205038856	NA
##	[16,]	0.215006300046	0.101993467277	2.3526866060558	-1.496710090293
##	[17,]	-0.848143301829	0.369774901114	0.1386423338561	-2.318465942623
##	[18,]	NA	0.248066049468	0.4911930772375	NA
##	[19,]	-0.208034818362	NA	NA	0.784356952358
##	[20,]	NA	NA	0.1432022472780	NA
##	[21,]	NA	0.608558341455	NA	NA
##	[22,]	NA	0.391192500533	NA	-0.558391857903
##	[23,]	NA	-1.477584040666	0.4764763865790	NA
##	[24,]	NA	NA	1.1375276354780	-1.077204133875
##	[25,]	1.483658069679	0.763147468408	NA	0.528186617161
##	[26,]	NA	-0.049838810875	0.2753942558847	0.051936060502
##	[27,]	2.017142785890	NA	-0.3005585705837	0.399607492993
##	[28,]	NA	-0.858164759177	-0.4526470258799	0.541535435458
##	[29,]	NA	-0.366951996409	0.0813248908297	NA
##	[30,]	0.475746442964	NA	-1.8894173589378	NA
##	[31,]	0.590420284612	-0.561487959763	0.4864373349129	1.657569213687
##	[32,]	0.347396245657	NA	-1.7993654663764	1.051047720136
##	[33,]	0.954573856685	-1.421579622278	NA	1.264010800180
##	[34,]	NA	-1.083573090514	NA	NA
##	[35,]	-0.463198315226	NA	1.2902202189974	0.201728779425
##	[36,]	-1.775318385148	1.420408431673	NA	NA
##	[37,]	0.793377068319	0.209796632271	-1.3775998015593	1.932836749321
##	[38,]	NA	NA	NA	NA
##	[39,]	NA	0.560663811911	-0.8053017923690	NA
##	[40,]	-1.530250473815	-1.334902897637	0.6036736877995	-0.264139059413
##	[41,]	1.782114364235	NA	NA	1.054685583123
##	[42,]	-0.894542813510	-1.400256973411	-0.0154168207314	-0.513928451349
##	[43,]	-0.306194622304	-0.058008519718	-0.7128048339632	NA
##	[44,]	1.072506417482	NA	0.6954294361981	-0.996235022361
##	[45,]	0.589903171390	-0.446870639674	-0.0627785749233	NA
##	[46,]	0.897292108201	-0.966027317131	-0.4216712944345	-0.302634754231
##	[47,]	-0.149286992910	NA	-0.4853144617650	1.186160094698
##	[48,]	NA	-1.633940605186	0.9406622797281	-0.477682169181
##	[49,]	-0.179891622588	-0.402677060277	NA	-0.144262834885
##	[50,]	1.635947923844	-0.297964806581	0.0524020672312	0.115839546972
##	[51,]	NA	0.489285209605	NA	0.647977298401
##	[52,]	NA	-0.498195318392	NA	0.458073823988
##	[53,]	-0.434948938624	NA	-1.3385435517562	NA
##	[54,]	2.937808297396	NA	NA	0.442135693357
##	[55,]	1.348471625139	NA	NA	-0.176011756894
##	[56,]	-0.426870060159	0.340522872815	-0.9176020778275	-0.753652451775
##	[57,]	0.352757449304	1.528879370120	0.2025267013294	0.177065647942
##	[58,]	-2.491429664443	0.443914177611	-1.3062683502303	0.230144258352
##	[59,]	1.579195074117	-1.078227645852	0.5875195322079	0.091494885994
##	[60,]	NA	-0.459581532656	-1.2728478842052	NA
##	[61,]	NA	NA	NA	2.723341407417
##	[62,]	-0.100175076044	0.529988834803	0.9034315564386	0.044300885431

##	[63,]	1.984190801035	-0.442302993470	0.7596874084240	NA
##	[64,]	-3.642825253556	-0.699988247600	NA	0.684884102056
##	[65,]	-0.600224154360	-1.353494643958	1.1676547151989	-0.435772231072
##	[66,]	2.600633041888	-0.594796919811	-0.9360680929800	0.730261874876
##	[67,]	NA	-1.587863370136	0.0043746391271	-1.716953656636
##	[68,]	0.590615051327	0.954842510154	NA	0.953141351064
##	[69,]	0.764993144043	NA	NA	0.755889435898
##	[70,]	1.840157258651	-1.405112798433	NA	NA
##	[71,]	0.461814020185	1.099374352532	-0.5066644718766	NA
##	[72,]	NA	0.605089884444	0.0896023742652	1.727439911012
##	[73,]	-1.281753324785	-0.325197779442	NA	0.192850220249
##	[74,]	1.425045376828	-1.281871644268	NA	-2.490938842939
##	[75,]	-0.845959127904	-0.916179180436	0.1685583648850	0.016933844729
##	[76,]	-0.121507429772	0.748580602959	0.3205249077456	-0.430781645693
##	[77,]	0.693884041545	NA	-1.1931140828246	0.275013632352
##	[78,]	-1.515375594785	NA	0.5845860834088	-0.973576960975
##	[79,]	-2.082955124457	-1.200912824872	NA	-0.698984482158
##	[80,]	-0.140352825498	NA	NA	-0.625192596972
##	[81,]	-1.151837468373	-1.375049227909	1.2022787020012	NA
##	[82,]	1.495433488786	-0.532566279963	0.0207377433391	NA
##	[83,]	-1.103029535529	-0.409133241257	0.5111000059877	-0.621886674828
##	[84,]	0.372631143568	1.288051938660	-0.2183847582839	NA
##	[85,]	0.662532861787	NA	NA	NA
##	[86,]	0.133071262809	-2.083927527242	0.8468939061170	-0.268930017411
##	[87,]	NA	0.651997959377	NA	NA
##	[88,]	0.659832578581	-0.338168930179	0.3603893954691	NA
##	[89,]	0.669858420343	NA	-0.0486430772703	2.644183781450
##	[90,]	0.658979371641	0.314106525006	NA	-1.065152397761
##	[91,]	-0.860665222294	-0.880505032020	0.4699431816394	0.913894083700
##	[92,]	-0.518458253357	2.708966942871	0.1461291937370	-1.062191356966
##	[93,]	1.535191844952	-0.257259580108	NA	NA
##	[94,]	NA	-0.345463257787	-0.0470870104193	NA
##	[95,]	-1.072636536750	0.674478117993	0.4576457816705	1.008810442084
##	[96,]	-1.843053278319	NA	0.2544344765532	-0.077263737849
##	[97,]	-0.237072144753	0.877016581049	NA	NA
##	[98,]	1.543425963983	2.044325181543	NA	0.980410590702
##	[99,]	0.286535780171	NA	NA	NA
##	[100,]	-1.040954875309	NA	0.6836126252819	NA
##		[,17]	[,18]	[,19]	[,20]
##	[1,]	NA	NA	-0.158334113738	NA
##	[2,]	-1.9124903304570	-0.651460764623	-0.176812780999	0.6525642560647
##	[3,]	0.8193564623325	NA	0.080181753279	NA
##	[4,]	NA	NA	0.323029064351	-0.0692888881156
##	[5,]	NA	NA	NA	2.1241554940737
##	[6,]	0.9796578182591	-1.027968544415	-0.605181451061	-0.8019076327721
##	[7,]	1.4770999592551	2.120750172252	0.564372028318	-2.0180598676253
##	[8,]	-0.4767104877553	NA	0.311003309791	0.8494212300957
##	[9,]	0.6515259411533	2.003698615183	0.254762542210	-0.4431688209219
##	[10,]	0.7977466540069	-0.898549481012	1.012062668085	3.1109209870658
##	[11,]	0.2666042431821	NA	-0.142656844052	-1.0558462764458

##	[12,]	-0.6227359295919	-1.594169520146	NA	1.0892979780423
##	[13,]	-1.1298426764309	NA	1.067125710739	NA
##	[14,]	0.7973255725710	NA	-1.510347199666	1.4634689439296
##	[15,]	-0.9445120236291	1.323653131643	-0.015504981539	1.8820333711738
##	[16,]	0.6210087569437	-0.515331098964	-0.660886045245	-0.1092709142043
##	[17,]	NA	0.820401320983	-1.035200579427	-0.9539325645357
##	[18,]	-0.2288771968856	-0.869177743295	-2.510617780346	-0.2212689954501
##	[19,]	NA	1.587394392225	-0.021903797455	NA
##	[20,]	1.2078321080495	1.744579575416	-0.094550815882	-1.9025074473122
##	[21,]	-1.5889194231115	NA	1.626454216074	-0.3593781729866
##	[22,]	-0.4349698566112	0.596987464944	-0.008281693353	0.3061000190209
##	[23,]	-0.3642963882020	NA	-0.135536249543	NA
##	[24,]	NA	-0.959195403566	-0.187007795235	-1.6675546666766
##	[25,]	1.4853046519762	0.871066761608	NA	0.4135283047886
##	[26,]	2.4613261738142	-1.683562683354	0.777915102162	0.2805946831181
##	[27,]	NA	0.362936821980	0.441773585188	-0.8122609990984
##	[28,]	-0.6175385159826	0.284633861039	NA	-0.2626853541180
##	[29,]	NA	NA	NA	-3.3574007887219
##	[30,]	2.0304500292280	2.005067536002	-0.430798690378	1.3768448597053
##	[31,]	NA	NA	NA	1.3145381925970
##	[32,]	NA	NA	NA	0.5985283248925
##	[33,]	NA	NA	0.851772544797	-0.8399401431414
##	[34,]	0.1761415974566	-0.780182520573	-0.111149880020	-0.3990830809605
##	[35,]	-1.0445390115830	-0.885682254437	-0.888684596719	-0.5440410615370
##	[36,]	NA	-0.656439220485	0.232526133162	-0.8490851457660
##	[37,]	0.7593081322136	-0.474575844559	-1.087276581041	NA
##	[38,]	1.2449151618622	1.595622486292	0.867458271349	NA
##	[39,]	-1.0964731757841	0.513031281837	-1.825396504327	NA
##	[40,]	NA	0.280627541728	NA	1.0880819594838
##	[41,]	0.0999004241525	0.995383624943	-1.579580683416	-0.6372555583610
##	[42,]	NA	NA	0.800955826244	0.0072554322609
##	[43,]	NA	0.466482534049	-0.944533350815	-1.4930898222912
##	[44,]	NA	-0.758755489549	NA	NA
##	[45,]	-0.0805682991552	-0.517911801569	NA	-1.2434320477053
##	[46,]	0.4365752778282	-0.701354918104	-0.063416298545	-1.3767737955895
##	[47,]	NA	0.433318343354	NA	0.7804143821501
##	[48,]	-1.9376137524216	NA	0.683191301002	-1.1814077920863
##	[49,]	NA	-0.566159112051	-0.190266141425	0.1411627313314
##	[50,]	-0.3940688843758	-0.409009295545	-0.161793512390	1.5309224075605
##	[51,]	0.1293440815633	0.491256665900	-1.373641156219	NA
##	[52,]	NA	1.223641988003	-1.595488622635	0.1816639290792
##	[53,]	-1.0244308032814	-0.398606627431	NA	NA
##	[54,]	-0.0136365103917	-1.349725175440	1.245568057933	NA
##	[55,]	-0.1822227634851	0.032280472793	-0.389338068067	-1.4664685091963
##	[56,]	-0.8741104218619	NA	0.710045193301	0.6645689809287
##	[57,]	0.0097233138465	NA	NA	-0.4712668310656
##	[58,]	0.4752546406721	NA	NA	0.8908001680473
##	[59,]	-0.1121700841467	NA	1.369772557681	NA
##	[60,]	0.5843324380209	0.403310698070	-1.498697902644	0.4908160798895
##	[61,]	-0.4930976750026	0.936512193904	0.231586138983	NA

##	[62,]	1.4550616556601	1.059035649393	0.359705664466	1.2177705930254
##	[63,]	0.3852233315635	-0.341168811730	-0.421734932131	-1.1088301725662
##	[64,]	-0.6125449208041	1.591604849792	-0.861973368681	0.7112216344527
##	[65,]	-0.5356006183408	-0.860663559598	0.121051008499	0.2368209622869
##	[66,]	-2.1082432253055	-1.721199215415	1.075891156899	1.9144504541194
##	[67,]	0.1200165307870	NA	NA	2.0940599873053
##	[68,]	1.6458629346080	NA	NA	NA
##	[69,]	NA	NA	2.181195346435	-1.4287295485544
##	[70,]	0.7914454826489	NA	0.259393474309	0.2120370069734
##	[71,]	-0.2276937404597	-0.389333625950	0.063755047619	0.4070117385442
##	[72,]	-0.0570376061996	NA	-0.230818053284	-0.1011066129353
##	[73,]	0.6636906504179	-1.129150668177	NA	-0.0349353419402
##	[74,]	NA	NA	1.008179219752	0.2039083290359
##	[75,]	0.3918383241100	0.059063601656	NA	NA
##	[76,]	NA	-0.289524041924	-0.621601669461	-0.5113956471287
##	[77,]	-1.2643804919238	NA	-0.627220356935	1.5592293549428
##	[78,]	-1.1519170725023	-1.105389206261	1.978561822951	NA
##	[79,]	0.0977502889909	NA	NA	-0.4257123209661
##	[80,]	-0.0336129947042	-0.645708669014	0.974836009967	0.9499375228829
##	[81,]	0.2511171841815	-0.952776706453	1.051060496616	-1.7556556401100
##	[82,]	1.3324264521722	-0.926881508434	-0.391378468020	0.4294915781922
##	[83,]	NA	0.714736076381	0.951115319551	-2.3074656416281
##	[84,]	0.8340844241161	0.263699935627	NA	-1.4388377120596
##	[85,]	1.1876215343831	-0.352621976444	NA	NA
##	[86,]	0.1206283314486	-1.114427855610	NA	NA
##	[87,]	NA	NA	-0.559464676335	NA
##	[88,]	-0.5270703857286	1.309996782912	-1.083587586349	-2.1563543554961
##	[89,]	-1.5550294600606	0.046303186000	NA	0.9215529050119
##	[90,]	0.1492703004190	1.775752997458	-0.674077862428	-0.6635345508738
##	[91,]	2.5857214069656	NA	-1.439005275824	-1.0244380168664
##	[92,]	NA	0.715991717727	-0.495169594319	-0.6425558747322
##	[93,]	-0.3623087577384	0.299467273413	-0.305667716699	-1.5500269775807
##	[94,]	-0.3465363247488	0.264552657515	-0.530109565062	NA
##	[95,]	NA	-0.957108322465	1.218174972931	NA
##	[96,]	NA	0.215878234779	0.023227045915	-0.0980597292135
##	[97,]	0.3932800118605	-0.284366369702	-1.457589426500	0.5453561839180
##	[98,]	-1.1969243643870	NA	-0.973092616610	-0.9619649080261
##	[99,]	1.3218546172155	NA	NA	NA
##	[100,]	0.6097440726355	-1.714635556841	-1.440366962986	0.7815247031460
##	[,21]		[,22]	[,23]	[,24]
##	[1,]	NA	-1.203125974898	NA	1.4773124559251
##	[2,]	-1.8100783050718	-0.452975416072	0.089731835572	-0.6382440734760
##	[3,]	-0.5539738817052	1.303528734319	NA	1.7511774996210
##	[4,]	1.5013000929969	-0.048775896295	0.188446879499	-0.3115795421442
##	[5,]	-0.3213968825258	NA	-1.114962618502	-0.7733194660264
##	[6,]	NA	0.765514517934	NA	0.6612514516729
##	[7,]	1.1199453115355	NA	-0.707838516677	0.6643712839217
##	[8,]	NA	-0.192207902606	-0.290553751781	0.0224370614543
##	[9,]	-0.3637924937424	-1.518772918990	0.714053433530	-0.5215075005482
##	[10,]	NA	0.122117540412	-1.023624211697	NA



##	[11,]	-1.6867344906058	0.179149546530	-1.648810234706	-1.2095918834795
##	[12,]	-1.2655536929372	0.878439072371	0.619743780640	NA
##	[13,]	0.4758163750142	NA	NA	0.1945963034301
##	[14,]	-0.1654321663886	-1.925053910936	0.620418515067	1.4074579676819
##	[15,]	-2.2665088916046	-0.698385075869	0.618140402184	NA
##	[16,]	NA	-0.363321969152	1.091409897439	0.2213715648877
##	[17,]	-0.2962662889427	NA	0.115017291193	-0.2137230370398
##	[18,]	2.2806243944304	-0.625918914357	-0.807215835864	1.2066630326860
##	[19,]	-0.3958976632898	-0.832922897165	-0.026890642238	-0.8803687393278
##	[20,]	NA	0.037198207307	0.244376959062	-1.0145157644985
##	[21,]	NA	-0.695210082723	-0.660349409142	-0.3233903063170
##	[22,]	-0.0892064202143	0.742337963033	NA	NA
##	[23,]	NA	NA	-0.404662468159	0.3035867283394
##	[24,]	-0.2151115409191	NA	NA	NA
##	[25,]	1.1589512730910	NA	NA	-0.3330389539062
##	[26,]	0.1859236350279	0.109929001131	-2.982965535266	0.1449170590477
##	[27,]	0.4499354790645	1.392462233219	0.325156955855	0.5000184974582
##	[28,]	-0.0665455451242	-0.691722708622	1.091515885471	NA
##	[29,]	2.1493420412683	-0.453126067086	NA	0.0117685330454
##	[30,]	-0.9129475180795	1.188936899732	0.927169737515	0.2873690543590
##	[31,]	0.8471563164233	NA	-1.628088332285	0.8122225560122
##	[32,]	NA	NA	-0.438756026608	-0.4835941070520
##	[33,]	0.3453168884152	0.233183053288	-0.405534444109	NA
##	[34,]	0.8504371255793	-1.009293590672	0.636486792567	NA
##	[35,]	NA	0.637990378355	0.670129607486	-0.0030477976066
##	[36,]	NA	-1.191750010416	NA	1.6362070998545
##	[37,]	-0.9519053125175	NA	NA	0.3887587783758
##	[38,]	NA	-0.026408226568	-0.565515579751	NA
##	[39,]	0.3584263777265	NA	NA	0.6323576389594
##	[40,]	-1.0266207895716	-1.858989180146	NA	-0.7097956583513
##	[41,]	NA	NA	NA	-0.9356112742054
##	[42,]	-0.4039769096639	1.440321542508	NA	2.1569060882236
##	[43,]	-1.1811735925561	0.108061564372	-0.442502898031	NA
##	[44,]	NA	0.399381029831	-0.576777779482	-0.0334315677192
##	[45,]	-0.0437204873847	NA	-1.494126327889	-0.6815779143246
##	[46,]	-1.4724778056656	NA	1.295931117001	1.3228205822455
##	[47,]	-0.4479368925681	0.350632877610	0.142997459608	0.4470383163608
##	[48,]	0.1585333046642	NA	-0.789210509931	-1.1575113533928
##	[49,]	0.1401993138776	-1.622609374997	NA	-0.7172896426403
##	[50,]	NA	1.379403739141	0.127730912028	-1.5638967691851
##	[51,]	-0.0510959832592	NA	NA	2.3765280652835
##	[52,]	-0.8191709840530	NA	NA	NA
##	[53,]	-1.7691961047857	0.763171308527	0.778703512554	0.7352040893992
##	[54,]	-0.3023611307222	-1.521304755098	NA	NA
##	[55,]	NA	NA	-1.608923642750	NA
##	[56,]	-0.8644782670301	2.191207044955	0.037272334732	-2.1594129084599
##	[57,]	-1.3065811497771	3.002923453613	-1.406738572059	NA
##	[58,]	-0.8326697056583	0.703805075344	-0.078998697458	-1.6940381526539
##	[59,]	-0.2533104710537	0.561660286471	-1.094273241106	NA
##	[60,]	0.3835899135260	-0.662038697533	0.275711816697	0.1439327559440

##	[61,]	1.5778258394607	-0.072677913733	0.472019135450	-2.3912145828831
##	[62,]	-0.2101389970111	-0.545580870357	-0.944860380167	1.0797926850145
##	[63,]	1.1249546246577	NA	0.124170486947	-0.2505562553558
##	[64,]	0.9673808954452	0.173810000377	0.270132885371	NA
##	[65,]	-0.2707406154669	NA	-0.135064827022	1.3113574310095
##	[66,]	0.0719174478246	0.521015658626	-0.527345333287	0.2901821213535
##	[67,]	0.5534739981931	-0.320616927441	0.727964519317	1.1160530545659
##	[68,]	0.8273394026162	NA	0.625527443982	-0.0389822359100
##	[69,]	-0.2302758497990	NA	-0.566560367111	0.3220547947018
##	[70,]	-0.4915338433061	0.763781497721	0.011184190606	NA
##	[71,]	-1.2159884596649	-1.350596164291	NA	-1.0760364675255
##	[72,]	0.3502971039589	-0.291867583614	0.915994190694	NA
##	[73,]	NA	0.139154931248	0.266167336397	0.7003139410449
##	[74,]	-0.1424750502685	0.426034608765	0.265000298983	NA
##	[75,]	0.4796434814686	NA	-0.289791665963	0.1814295756896
##	[76,]	-0.1153443107402	NA	NA	-0.2130707654050
##	[77,]	1.3507342356481	0.939879514789	NA	-0.2291598315657
##	[78,]	NA	0.463845060237	0.065405218269	0.6413222366787
##	[79,]	-0.3724556734411	-1.542777342748	-0.238129541461	-0.3104591234686
##	[80,]	NA	-1.274165142967	-0.235054274620	0.0893955211197
##	[81,]	NA	0.184786131795	NA	-0.1926838511876
##	[82,]	-2.4665557808135	NA	NA	0.1790123075479
##	[83,]	NA	0.984307284881	-1.045039611033	-1.9294260583874
##	[84,]	NA	NA	NA	NA
##	[85,]	NA	-0.861511825382	NA	NA
##	[86,]	NA	NA	-1.828641877096	-0.4018151083636
##	[87,]	NA	NA	-0.152824027981	-0.1132694363948
##	[88,]	NA	-0.538937668586	-1.415903532533	NA
##	[89,]	-0.0727896814471	-0.306742891458	-0.398870792655	-0.8903551880081
##	[90,]	0.0085946525022	0.434839409958	0.321917859749	2.4026168812758
##	[91,]	-0.8421218355726	NA	-0.059031636358	0.3253586879935
##	[92,]	0.7085706421455	-0.927757365136	NA	-0.1345524328048
##	[93,]	0.2621080358704	0.714001248875	NA	1.2570866012337
##	[94,]	NA	NA	1.997438330528	NA
##	[95,]	0.6648761141873	0.695150349809	NA	NA
##	[96,]	-0.1075500173422	NA	1.477928826444	-1.1550536813958
##	[97,]	0.2361685322377	0.772649903716	0.757221832035	0.7752262275982
##	[98,]	-0.5654075618814	1.174614840571	NA	0.3294258931632
##	[99,]	NA	0.635138140569	-0.982991440021	NA
##	[100,]	-0.1566204960593	-0.717669486925	NA	-0.3779900215112
##	[,25]	[,26]	[,27]	[,28]	
##	[1,]	1.178907814036	0.861811150787	-0.6304892240266	0.019934777901
##	[2,]	1.437999871472	0.249184955905	NA	-0.278422112662
##	[3,]	NA	NA	NA	-0.248673419448
##	[4,]	-1.048155108325	NA	NA	1.3067119999119
##	[5,]	NA	0.025005439686	-1.3134003435338	-0.657065574301
##	[6,]	-0.926393847755	1.817128154062	-1.3469503095432	-2.191763878684
##	[7,]	-0.840938589217	0.465490028143	-0.1139294145885	0.796955243086
##	[8,]	0.013625904571	0.475445194593	-0.8237456589467	-1.985848033205
##	[9,]	NA	0.654883209236	NA	NA

##	[10,]	-0.685429423827	NA	-0.0913413217041	NA
##	[11,]	-0.688186905218	NA	0.4753247781445	1.241416472558
##	[12,]	-0.649828036581	-1.453695103287	-0.4722995610481	1.324426456426
##	[13,]	NA	1.813816220610	NA	-0.206410194365
##	[14,]	-0.183278929665	-1.695257105541	-1.9355762836501	0.336318129105
##	[15,]	NA	0.505036335807	NA	NA
##	[16,]	1.177407307028	0.935020051975	NA	-0.825507971799
##	[17,]	-0.141593864674	-0.670418544575	NA	-0.507083425553
##	[18,]	NA	-0.303417476351	0.7521295259146	-0.746210108529
##	[19,]	NA	NA	NA	-1.305371945868
##	[20,]	0.857314978329	0.036362313961	1.1991166668718	1.493196101256
##	[21,]	NA	0.447630806127	0.5720986577074	NA
##	[22,]	NA	1.655313965971	-0.6575276907241	-0.241618092170
##	[23,]	-1.496995378872	NA	-0.7101169974265	-0.326904982867
##	[24,]	NA	-0.874725448273	0.1985904366930	-1.468484837934
##	[25,]	NA	NA	2.4300418088797	-0.541689699779
##	[26,]	-0.141616194033	0.010677313944	NA	0.169038108483
##	[27,]	-0.117279255472	-2.464391365258	-0.3477102803283	-0.330199779873
##	[28,]	0.027863491329	NA	NA	-0.348758817530
##	[29,]	-1.807904569629	-0.818327435147	NA	NA
##	[30,]	-0.810406878584	-0.100447121479	-0.2205557281788	0.750638159181
##	[31,]	NA	0.660500535145	-0.6051081380086	NA
##	[32,]	-0.948986049104	0.369771821191	-0.6924765897278	0.482782979897
##	[33,]	-0.299193157938	0.587538624135	-0.6491148792721	-1.004427219185
##	[34,]	-1.247299107717	-0.162779629807	-0.7659487151298	NA
##	[35,]	NA	NA	-0.1559704700733	NA
##	[36,]	-0.254303878190	NA	-0.7727531640060	NA
##	[37,]	NA	-1.544110824400	0.4564420434320	NA
##	[38,]	-1.022731599496	NA	NA	-1.200298960777
##	[39,]	NA	-0.955388659725	NA	0.210522504193
##	[40,]	1.197840275933	0.031128681187	0.5248201591960	-0.449942399360
##	[41,]	0.025486459261	-0.790454929976	0.5027194867338	0.921661179147
##	[42,]	-1.234434914303	1.350412438487	NA	-0.058993532842
##	[43,]	0.333336814649	-0.626872527904	-0.1830802279012	0.082667659893
##	[44,]	0.129128318282	-0.826953991602	NA	-0.108924036859
##	[45,]	0.466458373902	-0.651660824059	0.9390689711405	NA
##	[46,]	2.330422490515	1.609043035745	0.3730388408852	-0.242014068611
##	[47,]	0.904997461500	NA	-2.3087059938578	-0.157989794356
##	[48,]	0.716714684903	NA	-1.1242491790827	NA
##	[49,]	0.401078526219	NA	-0.5034047126292	-0.165868504666
##	[50,]	NA	-0.414897930969	-1.1037729315458	NA
##	[51,]	0.039816855585	1.844857354305	-0.2717473460624	-0.401192753283
##	[52,]	NA	-0.096753468611	NA	NA
##	[53,]	-0.387461549650	0.673318244221	-0.7700114734263	-1.643678079538
##	[54,]	-0.168430987638	NA	0.5539224380343	-0.948077164934
##	[55,]	NA	1.310324648623	0.3529398799928	-0.503560391603
##	[56,]	0.462397648629	NA	NA	-0.988568273406
##	[57,]	-0.103870633116	0.650004504683	-0.3207401709206	1.947341924902
##	[58,]	0.707960963684	0.846354948072	NA	0.418244834533
##	[59,]	NA	-0.179869721510	-1.3895729146265	2.798402648598

##	[60,]	-1.534973272110	NA	1.1350649503336	1.422679282778
##	[61,]	1.677445100148	-0.384765518422	-0.4313877162689	1.742112207316
##	[62,]	0.443940649159	0.282091822393	NA	NA
##	[63,]	-0.860721843885	NA	-0.4198691511134	0.521638873162
##	[64,]	-0.863566830268	-0.371318668112	0.0016977957476	-0.113574452904
##	[65,]	NA	NA	-1.7654713142640	NA
##	[66,]	0.556245416280	0.979128854328	-1.2253480309789	-0.167476326109
##	[67,]	NA	-1.333169032166	NA	NA
##	[68,]	1.046989634297	1.036680112470	0.3464225404866	0.878694074981
##	[69,]	0.535084994496	0.286607886193	NA	NA
##	[70,]	NA	NA	0.1349198744103	0.376674109463
##	[71,]	NA	0.016254986750	NA	NA
##	[72,]	-1.814285441404	-0.695383615574	NA	1.595120755930
##	[73,]	NA	-0.013408139753	NA	-0.799539718452
##	[74,]	-0.895483340155	1.223905849492	-1.5216543506078	NA
##	[75,]	NA	NA	NA	1.039823806749
##	[76,]	0.597715402416	-1.482481800799	-0.1424485294885	1.141105540181
##	[77,]	-0.717077865577	0.213029883566	-2.4119783912273	NA
##	[78,]	-0.622952362065	-1.319453144253	1.2764338836542	0.909852925919
##	[79,]	1.162514420440	NA	0.3606568927555	NA
##	[80,]	-0.378347317677	1.523209468469	-1.5040645911715	NA
##	[81,]	NA	NA	-2.3671765084333	NA
##	[82,]	-0.593447739973	1.681930183327	-0.1323903678375	NA
##	[83,]	-0.807739154081	1.967617615978	-1.4492467534840	NA
##	[84,]	1.107830629874	-0.368983960024	NA	-0.686413321594
##	[85,]	-0.162520227330	-0.068970916117	0.4625521019707	1.302452094294
##	[86,]	NA	0.512381978298	-0.2182914331769	0.482879964301
##	[87,]	-0.012758212661	-1.973609198937	-1.0949993812292	NA
##	[88,]	NA	0.027109178005	1.1298015722557	0.195037851103
##	[89,]	0.869492317131	1.647166491147	NA	-0.561870931250
##	[90,]	1.678523699254	0.362385232847	-0.6181169661118	0.387509756873
##	[91,]	0.951239033399	-0.501148323267	NA	0.218004615787
##	[92,]	NA	-0.948639352319	NA	-0.708422508358
##	[93,]	1.565659115938	NA	0.4907244990600	NA
##	[94,]	NA	0.330477285826	0.7500204361072	NA
##	[95,]	NA	1.023503238255	NA	NA
##	[96,]	-0.237569058332	NA	1.7080644214697	0.514823455266
##	[97,]	-0.892748857237	-0.990502816894	-0.5896372202960	-1.046583881538
##	[98,]	2.341826930126	-2.459281037381	-1.8616817203864	-0.678459873133
##	[99,]	-1.429278228876	-1.502196902267	-1.2547868536085	NA
##	[100,]	NA	-1.088251473777	NA	NA
##		[, 29]	[, 30]	[, 31]	[, 32]
##	[1,]	1.8681605418665	-0.563719072477	-0.643966422130	NA
##	[2,]	0.6136829184116	0.794191077566	0.672940545726	0.629904589202
##	[3,]	-0.8732268340880	0.154200352053	NA	0.609019674737
##	[4,]	NA	NA	NA	-1.240467597621
##	[5,]	2.3987809464475	NA	0.274668107650	-0.775856273668
##	[6,]	NA	NA	1.474461137352	-0.230547974219
##	[7,]	-0.1697497171477	-1.000903129156	-0.317260467570	NA
##	[8,]	-0.4569378124657	-0.419718100371	NA	NA

##	[9,]	NA	0.552090334502	NA	NA
##	[10,]	NA	0.584473220001	NA	0.516375455764
##	[11,]	1.0675032376883	0.548668837792	-0.192411358067	NA
##	[12,]	0.4862357483713	NA	NA	-0.544971089548
##	[13,]	-0.4281436918479	0.500314979806	-1.790512675219	NA
##	[14,]	0.9715555161830	NA	0.619429732781	1.064639878737
##	[15,]	-1.5155366269683	0.544893639986	0.075441391211	0.870598666916
##	[16,]	-1.1926914643825	-1.285557238084	0.858712061580	0.248821416229
##	[17,]	-1.5766550200729	-0.686213727364	0.766533858554	NA
##	[18,]	-0.1554397186394	NA	-1.304185336586	-1.422133661246
##	[19,]	0.1747515179261	-2.063688698940	1.930800034373	0.982791295827
##	[20,]	1.0510027397860	NA	0.815127694422	1.049567527290
##	[21,]	-0.8191828453694	-0.322974976671	0.187247160627	-1.321058569716
##	[22,]	0.7211904593441	-0.444793184365	-0.361318711917	0.856446107705
##	[23,]	-0.6338688705832	2.052406179971	-1.010776318402	0.397883629058
##	[24,]	-0.5499953503559	-0.496328994637	NA	0.755208369132
##	[25,]	-0.0076459735664	NA	-1.202762465696	0.107302510580
##	[26,]	NA	-0.124349202378	NA	0.035741870520
##	[27,]	-0.5872759700458	0.331508941398	-0.264836924944	NA
##	[28,]	1.0691767070061	NA	NA	-1.410295034120
##	[29,]	NA	NA	-1.010074361950	0.919466116317
##	[30,]	-1.8885549760081	-1.458406836092	-0.705932741080	0.593531134842
##	[31,]	NA	1.572670143540	NA	-0.345873618633
##	[32,]	-1.0941700014382	0.241685693852	0.749635359948	NA
##	[33,]	-1.7771573137634	0.752904651477	NA	NA
##	[34,]	1.0242830070898	0.630761733302	NA	NA
##	[35,]	-0.9903815791836	-0.352294957240	NA	1.379169419866
##	[36,]	0.3342787063963	-1.505467183276	-1.281873834686	-1.778786741578
##	[37,]	-0.0131539565162	-2.544913159533	1.430659252999	NA
##	[38,]	0.0830098396474	-1.496689261852	0.223821790300	0.678314745358
##	[39,]	NA	NA	-0.299123107056	1.298483179240
##	[40,]	-1.2913167902402	0.216921871644	-0.583065675326	NA
##	[41,]	NA	-0.157852849876	2.976015260769	0.577708093785
##	[42,]	1.9838820849172	0.354899431967	0.146725538380	-0.822122538499
##	[43,]	NA	0.278940245150	0.234843369884	0.073207349448
##	[44,]	-1.5713039309783	NA	NA	-0.488768937425
##	[45,]	1.1546047597032	0.032877380278	-1.093231461953	-0.360249711241
##	[46,]	NA	-2.238735116717	1.290725746680	0.802414976102
##	[47,]	-0.2545696236876	NA	0.504654265211	NA
##	[48,]	NA	-0.719810195510	NA	NA
##	[49,]	NA	0.249341318058	-2.011767145407	-1.204807675872
##	[50,]	NA	-1.673834016246	-0.870708887949	-0.527034218084
##	[51,]	2.1173610036148	-0.536689123244	-1.277499293557	-0.426229174597
##	[52,]	NA	0.147771473264	0.143236990612	NA
##	[53,]	NA	-0.363185425595	0.054302440189	2.389401360233
##	[54,]	1.5600516238114	NA	NA	NA
##	[55,]	-0.8278602927501	-0.407222887114	-1.262360374560	2.350008381834
##	[56,]	-0.0437023532808	-0.469375049123	0.791838389824	1.444519065063
##	[57,]	NA	-0.693766424963	-0.546766953194	NA
##	[58,]	NA	0.317822296729	1.516687514203	1.432482305415

##	[59,]	NA	0.950394309125	-0.449754573505	NA
##	[60,]	1.2929883533310	-0.452417853058	-0.415944366344	0.438575727379
##	[61,]	NA	-0.085544884979	-0.336348454699	2.040178698814
##	[62,]	1.6211909913803	1.486775030674	-1.403700672896	0.034767145573
##	[63,]	NA	2.145229394178	-0.655189228308	-0.343228790824
##	[64,]	-0.8201720930060	1.001539575236	0.768079765624	0.995563874609
##	[65,]	0.9286497193328	0.722648828149	1.040635334565	NA
##	[66,]	-0.5497066531574	-0.991540225553	NA	NA
##	[67,]	0.3955974832960	-1.237127020449	NA	-0.039222060390
##	[68,]	NA	0.107534420288	-1.207225219082	0.425888835945
##	[69,]	-0.5901879546874	0.019385282154	0.030364008279	1.032460773133
##	[70,]	-0.8375075829381	-1.241290948094	-0.177055704744	-0.282327389581
##	[71,]	NA	1.140077879604	NA	1.198264850199
##	[72,]	NA	NA	-1.293355034039	2.740122107952
##	[73,]	-0.1071849910515	NA	0.727615813280	-0.131929520041
##	[74,]	NA	-0.568045352707	0.198540387568	-0.077996029903
##	[75,]	0.6029791792199	-0.896469982722	-1.621130309085	0.028123537381
##	[76,]	0.6623998514684	0.409352698640	-0.302693044186	1.161568779911
##	[77,]	-1.1748081768009	-0.077457948010	-0.234314738034	-0.798334378289
##	[78,]	NA	NA	-0.017815890754	-0.135410443351
##	[79,]	-1.5677366390170	-0.175456952376	1.706108556966	0.509611364990
##	[80,]	0.9745779377218	NA	NA	NA
##	[81,]	-1.1767084660784	NA	1.666918982528	-0.781533661724
##	[82,]	NA	-0.964637039411	-1.001727659022	0.933021260526
##	[83,]	2.1123012582952	NA	-0.722249014629	0.495748521986
##	[84,]	NA	NA	0.355730335599	NA
##	[85,]	0.8914436246422	0.346873767469	-1.085381520736	0.748423057532
##	[86,]	-0.4331620235416	0.152866705991	NA	-0.906098013141
##	[87,]	-1.1805881439363	-0.476582691849	NA	-0.769231148330
##	[88,]	-0.9971872198154	-0.187658198940	NA	-0.931751725789
##	[89,]	0.5720075982859	0.224038167014	1.917838191666	0.099205933182
##	[90,]	1.3737073036877	-0.541204727590	NA	0.531496073958
##	[91,]	NA	NA	-0.393513711644	1.188660617504
##	[92,]	0.0330255465036	-1.345335027627	-1.039991935030	0.572931736016
##	[93,]	0.0519246312970	0.461158953256	0.269272494165	0.107495849927
##	[94,]	0.9703870451338	-0.172333230904	0.136754193836	NA
##	[95,]	NA	-0.547856658952	0.018858078681	0.702337076169
##	[96,]	-0.2090107025263	0.039873147974	-0.654058889176	1.454382838182
##	[97,]	-1.2199254735048	1.123179545174	0.619732530872	-0.568433288520
##	[98,]	-1.1329436818162	1.150646729434	-0.140492690792	NA
##	[99,]	-0.2373477324657	-1.030246312698	-0.274255036450	NA
##	[100,]	-0.5595680005891	-0.306255146938	-2.853316033210	-1.034602521812
##	[,33]	[,34]	[,35]	[,36]	
##	[1,]	0.412498863545	0.025184500602	1.009316950539	0.4539694970830
##	[2,]	-1.647528796517	-1.211292401227	0.620586672911	-0.7150260979954
##	[3,]	0.597599625867	1.832298722557	-0.232513172283	NA
##	[4,]	NA	NA	1.051757860006	-0.1994682312108
##	[5,]	-1.196063660710	0.108624804569	0.915000091001	NA
##	[6,]	0.943275636617	1.311623404891	NA	-0.4236153383123
##	[7,]	-2.241015984151	-1.580490927113	1.416995026368	0.3853912538924

##	[8,]	NA	-0.058643495858	-1.420519530909	0.3193347017268
##	[9,]	0.221579585147	1.094875451414	NA	NA
##	[10,]	1.780603515603	NA	NA	0.4050346054249
##	[11,]	0.031809732612	-0.129244003480	0.522813672201	0.4769226658515
##	[12,]	NA	-1.885064171319	NA	NA
##	[13,]	-0.839124630576	0.797966246921	0.125480789734	-1.5181431265728
##	[14,]	NA	NA	-0.892140992225	0.4251259198904
##	[15,]	-0.304546362264	NA	NA	0.3063108803903
##	[16,]	NA	-0.312828041667	-0.743524742883	NA
##	[17,]	-0.398907306590	-1.424873332183	1.609022754564	2.1570278651443
##	[18,]	1.009846400092	-0.776875110688	-0.495581921566	0.6267632079361
##	[19,]	0.279052412985	-1.322587324436	NA	1.0681930079768
##	[20,]	NA	-1.045430296426	0.772705274393	1.2923595055793
##	[21,]	-0.696864764909	1.376329002168	-0.596280005209	NA
##	[22,]	0.403106029331	0.272233968443	2.152483156073	0.0033928857984
##	[23,]	NA	-1.990795627017	-0.960987675357	NA
##	[24,]	NA	NA	-0.034338604271	1.6946202746946
##	[25,]	0.236463195667	-1.140311329510	NA	-0.9993624407759
##	[26,]	NA	-0.231420703457	2.886301267300	-0.4614938484863
##	[27,]	-1.350128294377	0.241557386250	0.245458475559	0.7465483094530
##	[28,]	-1.787506572212	NA	0.669117467698	0.9749900493707
##	[29,]	NA	-1.038188114204	-1.374097245107	-0.6258260076207
##	[30,]	-0.873664185868	NA	0.567501778307	NA
##	[31,]	-1.824962001009	0.425731438798	-0.695250310794	0.2599267840802
##	[32,]	NA	NA	-0.767374596690	NA
##	[33,]	0.846016501513	0.516106395593	0.323458546487	NA
##	[34,]	-0.221779874977	0.796561421301	-0.299936044866	0.2935709347939
##	[35,]	NA	-0.089499522426	-1.092981137910	-1.8628523273400
##	[36,]	1.974832455019	-0.807586827776	-2.225517067174	0.4372399650867
##	[37,]	0.866213422566	NA	NA	1.1828965847718
##	[38,]	-0.931609280591	-0.010191431136	1.049903496912	NA
##	[39,]	NA	0.278218210758	1.799945315728	NA
##	[40,]	0.610515008451	NA	NA	-1.1987229488350
##	[41,]	NA	-0.250974463209	0.234946212290	NA
##	[42,]	-0.872968929234	0.874493085556	-0.327478829693	-0.2695131978210
##	[43,]	1.905872772938	0.912883149205	NA	2.2725825871023
##	[44,]	0.143734751910	0.050578579041	0.444199134038	-0.2935540935606
##	[45,]	-1.845239357059	NA	1.269736791015	NA
##	[46,]	1.209456405569	NA	NA	-0.8882410449511
##	[47,]	1.062503545271	-0.798769875772	NA	-0.7449124869872
##	[48,]	-0.750211052454	1.385210470244	0.123084735885	0.8512267358226
##	[49,]	NA	-1.708841299940	NA	NA
##	[50,]	-1.915149010820	-0.609933081963	2.231402071395	0.1714121106958
##	[51,]	NA	-1.110115641751	0.376946778547	0.7346481396147
##	[52,]	0.096598343333	0.469366058444	-0.504742670068	0.5620972305633
##	[53,]	3.021373697632	NA	-0.838486639059	-0.1050477179664
##	[54,]	-2.263173087030	NA	0.302394280559	-0.3231418255808
##	[55,]	-0.012295161107	0.054776760875	-0.689832357581	NA
##	[56,]	0.626352241703	1.518078294060	-2.114213960866	-0.6151172020221
##	[57,]	0.772744864717	NA	-0.380404140310	NA

##	[58,]	0.656038585701	NA	-0.197780496935	1.2906521946113
##	[59,]	-0.966657818999	0.249789389109	0.887674388810	NA
##	[60,]	NA	-0.964096798001	-1.373837581970	-1.9707034269033
##	[61,]	0.027405445205	0.725997902231	-2.000167940581	-0.3889075580041
##	[62,]	-1.336418590142	NA	-2.280045998638	NA
##	[63,]	2.255466788895	NA	1.086002126749	3.0560032656352
##	[64,]	-1.216804407760	-0.218742529464	1.719125449832	-0.4481524906381
##	[65,]	0.552089281750	NA	NA	-0.4424004722885
##	[66,]	-0.065640107523	-1.409835546653	0.558952507801	-1.9001672016374
##	[67,]	0.668732069809	0.744912676859	1.285444037979	-1.7017237254103
##	[68,]	1.229206803249	2.608607473070	1.372934773538	-0.4998969202273
##	[69,]	-0.669555144679	0.104183373487	-0.473013400307	0.1797113177163
##	[70,]	1.076448313683	-0.174995440544	0.078465407674	1.3430368406109
##	[71,]	0.198670876117	-1.240959800255	0.925272888957	-0.2179679490641
##	[72,]	NA	NA	NA	-0.4310723386935
##	[73,]	0.877174081158	-0.277158759626	NA	NA
##	[74,]	0.795489328972	-0.485276849797	NA	0.4551117268670
##	[75,]	-0.160301187783	1.207029579548	-0.025867676250	NA
##	[76,]	0.184330533353	-0.847258183195	-0.188448606188	-1.1878444787063
##	[77,]	0.531848139859	-0.040065980455	-1.637780022317	-0.7681928646995
##	[78,]	0.393250493478	-1.824528608805	0.094670306245	NA
##	[79,]	NA	0.430746090398	-0.544611861034	-1.2846320474655
##	[80,]	NA	0.115714573628	-1.653000984258	NA
##	[81,]	-0.077833671392	-0.386085524247	2.056495815280	-0.8329239666980
##	[82,]	0.245455214964	1.493457752044	NA	0.5388067146743
##	[83,]	NA	0.727142844476	-1.510253804341	NA
##	[84,]	-0.347279604467	NA	-0.744609836192	0.9841874766510
##	[85,]	NA	1.112644632536	0.336226751352	-1.8206710699991
##	[86,]	NA	-0.473665929967	NA	NA
##	[87,]	NA	-0.206084138560	-1.021557773960	-1.1363741647341
##	[88,]	0.400606693272	-0.775417139511	1.249219292782	NA
##	[89,]	NA	0.662326886471	0.096148773038	0.3394029624135
##	[90,]	0.023016955313	NA	0.217162871409	1.0652529295484
##	[91,]	NA	-0.942197248726	-0.469094266584	0.2788766958217
##	[92,]	0.884167106898	0.349148594301	-0.331785429286	-0.9194569381621
##	[93,]	-0.461073566848	-0.716826199616	1.888334186981	-0.3167911631987
##	[94,]	1.337324895422	-0.534268408761	-0.779924855410	NA
##	[95,]	NA	2.588980371614	-2.012140480308	0.3921976203750
##	[96,]	1.864604593536	-0.054823259709	NA	0.6483749810132
##	[97,]	-0.902995973333	0.942816005754	NA	NA
##	[98,]	1.508405464677	-0.056968554145	1.408493215867	NA
##	[99,]	-0.281676862282	-0.693660429587	-0.370631302446	-0.2262481752123
##	[100,]	1.257766652901	-0.996564049837	NA	-0.3326093217755
##		[,37]	[,38]	[,39]	[,40]
##	[1,]	-1.102067608548	NA	-1.430402114647	0.660416837985
##	[2,]	NA	1.8072440015695	-0.962320355141	0.516515229771
##	[3,]	-2.164727966967	1.6718395047054	-1.578611624641	-0.555037750739
##	[4,]	0.263534926682	0.5286200023047	NA	0.347063291293
##	[5,]	NA	0.8687291307478	-0.325436282968	NA
##	[6,]	-1.040805638858	-0.7182621321108	2.047048391690	NA



##	[7,]	-1.732713420028	-0.0536278530108	NA	3.091908774225
##	[8,]	0.728169812338	-0.7015019512327	-1.914452992375	-1.616288039722
##	[9,]	NA	0.1378497953095	NA	-0.156848566310
##	[10,]	1.180743054748	1.1901885761498	NA	0.499451396879
##	[11,]	-0.050835297404	NA	NA	-0.667540932601
##	[12,]	-0.947245112375	1.3813646516800	-0.026854667212	0.108047893543
##	[13,]	0.110879885654	-0.1519595468365	0.643725457012	-0.367162844235
##	[14,]	0.099680787635	2.0041077667423	1.228152208530	0.582700783827
##	[15,]	-0.849492742378	1.5306013935818	0.246859462590	1.074177676854
##	[16,]	NA	-0.1634264167398	-1.546491293133	-0.825426846227
##	[17,]	0.356875050860	NA	NA	0.428631530503
##	[18,]	NA	NA	NA	NA
##	[19,]	-0.222022578524	-0.0323155445488	0.098718866692	-1.644322779988
##	[20,]	NA	-0.5330443378895	1.397074492499	0.510319873789
##	[21,]	0.687495039839	NA	NA	NA
##	[22,]	-0.917110135187	-0.6338748442805	NA	0.197221852632
##	[23,]	NA	0.0959440121753	-0.131684339597	0.880580012831
##	[24,]	0.200247480766	0.7436290866449	0.490988311893	-1.618801862963
##	[25,]	0.639045372322	NA	1.443118970490	NA
##	[26,]	NA	-0.1129837731659	NA	0.832291568620
##	[27,]	0.038235626099	-0.5089965958037	2.846200438386	NA
##	[28,]	-0.691191920016	0.2744361758493	-1.474625770847	-1.626435852544
##	[29,]	-0.130805993012	0.5954616117087	-0.489572692520	1.466105000755
##	[30,]	0.867889542437	0.1327312693173	-0.063691014665	0.157923752864
##	[31,]	-0.573348288922	NA	-1.430121763396	NA
##	[32,]	0.760937696694	-1.8936279605183	-0.555878345447	0.390575095622
##	[33,]	0.023164148759	NA	NA	NA
##	[34,]	NA	0.3523090465117	NA	NA
##	[35,]	-2.355785755223	-2.0769601185002	-0.140578691820	1.119129069761
##	[36,]	NA	-1.9473815680886	1.110666766689	0.130392009732
##	[37,]	NA	0.8515682608173	0.846928472383	0.106136247819
##	[38,]	0.710396559316	-0.8694724432578	-1.434029565505	NA
##	[39,]	2.377549989304	0.1568462541615	-0.688252432485	NA
##	[40,]	0.536978784068	NA	NA	NA
##	[41,]	0.307139797266	0.3718934882503	NA	NA
##	[42,]	1.047105980930	NA	-0.865082275704	-0.754920900681
##	[43,]	-2.286580267852	-0.6748701446068	-2.038068416443	-0.504195251695
##	[44,]	1.181565962729	-0.0475659162597	1.830920412805	NA
##	[45,]	NA	NA	0.606548172352	NA
##	[46,]	-0.385984978934	1.2632623862504	0.034675695976	1.100966803365
##	[47,]	NA	0.7173505215336	-1.297149435715	-0.719160416844
##	[48,]	NA	0.6610531771498	-0.157386947969	-0.074404973278
##	[49,]	0.022822727918	0.3531566066833	NA	NA
##	[50,]	-1.043312253052	NA	0.324296963792	0.346987507715
##	[51,]	NA	1.1547782025538	NA	NA
##	[52,]	NA	1.4525797335774	1.521705725862	NA
##	[53,]	0.060538723771	1.3938926027518	0.210268006585	-0.506890056830
##	[54,]	0.792766642133	0.6942130811689	-0.190005325847	-0.486011268717
##	[55,]	0.606043349770	NA	-1.172087502454	NA
##	[56,]	-0.502407750504	0.2587481415080	0.031852919484	2.416610199683

##	[57,]	0.306380586883	-0.8354042147542	NA	0.614728831292
##	[58,]	0.509852607513	0.4382459664782	NA	NA
##	[59,]	NA	NA	0.497448945205	1.155450464972
##	[60,]	-1.252208073041	0.9966591232640	0.577202820283	1.123492874783
##	[61,]	NA	-0.1021245084477	0.059349485206	0.107941652027
##	[62,]	NA	NA	NA	-1.130232745438
##	[63,]	NA	1.4795133634437	-1.820471025450	NA
##	[64,]	-0.152947197102	1.6855262369515	1.064058552101	-0.691713829001
##	[65,]	NA	-1.2613660925980	NA	-0.890394176333
##	[66,]	-1.334666821972	-1.4973405847900	-1.169820051059	0.563425106534
##	[67,]	-0.950666696008	1.0018091934408	-0.094806224127	2.296321735395
##	[68,]	NA	1.5819188567645	-1.342485937093	NA
##	[69,]	NA	-1.0928119353267	0.031646207448	NA
##	[70,]	1.016256237472	NA	NA	-0.058583714459
##	[71,]	-0.128421659997	1.1781179267117	0.264427913261	NA
##	[72,]	-0.124426673959	-0.3507926314658	-0.568516678087	-0.730464683114
##	[73,]	-0.127395388732	NA	-1.027464292426	1.504093729259
##	[74,]	-0.755951190793	0.7192791423798	0.863477241046	0.774073507925
##	[75,]	-0.210362584824	-0.2871109073920	-0.495764896443	-1.048448332864
##	[76,]	0.049664929599	-0.4885911242964	NA	1.234867600200
##	[77,]	-2.059004355959	-0.0081479057065	-1.191225301973	1.956373173159
##	[78,]	1.449855691355	0.6785623002517	0.438431179586	0.125480851707
##	[79,]	-0.326027999507	NA	0.805109467540	-0.269783960715
##	[80,]	-0.382624961838	2.5905984616628	-0.125870754052	NA
##	[81,]	0.297752435584	1.4716386305105	-0.507985567640	NA
##	[82,]	NA	NA	NA	0.019403677540
##	[83,]	-0.503055778633	NA	0.400086881671	1.958851546441
##	[84,]	NA	0.8574466204060	-0.087309593887	NA
##	[85,]	0.088272591234	-0.0245486289608	NA	0.128923977509
##	[86,]	0.794108246526	2.0662767816955	-1.533887555101	1.427962064750
##	[87,]	NA	0.6102136177633	-1.356846411790	0.174344012097
##	[88,]	1.706525613827	0.8042687677837	NA	NA
##	[89,]	0.310124991472	NA	-0.392853057701	0.246790160731
##	[90,]	0.180628543505	0.8223910783561	0.593149091754	1.572158463998
##	[91,]	0.180110444666	0.9884751314938	-2.293326214851	NA
##	[92,]	-0.219580028990	1.1614983170801	NA	0.673354493339
##	[93,]	-1.013479324046	NA	0.187217641882	NA
##	[94,]	NA	NA	-0.682488157098	0.391231919265
##	[95,]	0.274385649223	2.5529335288318	-0.692703544792	0.468582026991
##	[96,]	-0.414218812236	1.2477406123404	-2.296015540018	-0.156505096710
##	[97,]	0.161747665557	0.7654113332420	NA	-2.035916408608
##	[98,]	0.380977486394	NA	-2.047358646773	0.019843619304
##	[99,]	NA	NA	NA	NA
##	[100,]	-0.950102084716	NA	-0.075763336461	-0.208394336148
##		[,41]	[,42]	[,43]	[,44]
##	[1,]	NA	-0.278916611497	-0.5752727401650	-1.3770407984039
##	[2,]	NA	1.160724366959	NA	0.8773149715539
##	[3,]	NA	-0.790669579395	NA	-0.0621092554511
##	[4,]	NA	-1.559743109938	1.3353978978625	0.8454099366142
##	[5,]	0.1324319205515	0.657239715914	NA	1.2441835443139

##	[6,]	NA	0.431879481840	0.5726753339387	-0.2313287155790
##	[7,]	-0.2854176170120	-2.199010759657	-0.4742725397281	-0.4808787100789
##	[8,]	0.5285229584961	0.160254335487	-0.5911642305399	-0.2142056862690
##	[9,]	0.1318617691982	-0.932953466790	-1.3586894850753	-1.3376736871814
##	[10,]	-0.8371634612611	1.347838711210	-2.1431116884229	-1.1531562805761
##	[11,]	3.5402652296161	-2.177894000018	-0.1727004568618	-1.5459275394153
##	[12,]	0.5951914840326	-1.992890715886	NA	NA
##	[13,]	-1.2038129368141	0.497501664802	NA	0.5012601556609
##	[14,]	NA	0.052762496696	NA	-1.4981994427511
##	[15,]	NA	NA	0.2031559547422	-0.2632447550458
##	[16,]	-2.6340373588273	-1.140049729842	0.7385354703287	0.0231330991759
##	[17,]	NA	NA	NA	0.0052702054250
##	[18,]	0.1451621865090	-0.212529070097	NA	NA
##	[19,]	NA	1.634275825148	-0.0091615585303	0.3608579650200
##	[20,]	NA	-1.856673206662	-0.1391443879530	NA
##	[21,]	0.9702815251199	1.715064456965	-1.4764964227335	-1.6283305300874
##	[22,]	-1.0045553702772	NA	0.6225446163631	NA
##	[23,]	-0.1238222447504	-0.642702113438	-1.1096739187934	NA
##	[24,]	1.1354592848290	NA	-2.3142024139025	-0.6261009166910
##	[25,]	-1.3374425932358	-0.155940578344	NA	0.1505389423056
##	[26,]	0.0876520150075	0.188647892462	-0.1449056019757	2.0278555979490
##	[27,]	NA	1.585590032706	-1.4241309396785	0.9900841428524
##	[28,]	-0.0029470414186	NA	-0.2422843445497	-0.1110248030250
##	[29,]	0.0317484389137	-1.412457735474	-0.7238611957764	NA
##	[30,]	NA	NA	1.7693391133950	-0.8731265895030
##	[31,]	0.7898416113626	0.022464997747	-0.6518583133099	0.0082630306164
##	[32,]	-1.9135135185105	-0.149807370732	NA	NA
##	[33,]	-2.1829154908747	0.203522097176	3.7410812934524	NA
##	[34,]	NA	-0.367734409278	NA	-0.6119085116953
##	[35,]	-0.8806368658595	-0.108931060171	-0.0054145136916	NA
##	[36,]	NA	NA	-1.9574303525468	0.3684010499129
##	[37,]	1.8065495025186	0.466463850273	NA	-0.5083193366252
##	[38,]	-0.6328442508905	NA	-1.2368694407082	NA
##	[39,]	0.0808611058743	NA	0.1096994007001	-1.8075770502690
##	[40,]	NA	0.125548058550	-1.2178063921551	0.3504873377409
##	[41,]	NA	1.160024147243	1.2521116607599	0.9092243016822
##	[42,]	-0.6816942550354	1.613769792572	0.8215021425316	-0.6133800618870
##	[43,]	0.5577018821463	NA	NA	NA
##	[44,]	-0.9958422775365	-1.055273646636	NA	0.0719482211566
##	[45,]	NA	-1.903439564514	0.7030705711873	-1.4913232702166
##	[46,]	-0.2108004828378	-0.155415510222	NA	0.2062615744388
##	[47,]	-0.5023035003719	-0.465044940822	0.6021635569902	-0.8829745337084
##	[48,]	NA	NA	NA	-0.6032746289231
##	[49,]	-0.4061641220115	NA	NA	0.4889658585677
##	[50,]	NA	NA	-1.0160801197577	-0.7004623074235
##	[51,]	0.7569545690574	NA	0.7469353944865	0.1285086014303
##	[52,]	NA	NA	1.4491140219244	NA
##	[53,]	-0.4620629404203	0.387535070120	NA	NA
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##	[55,]	0.1690069414024	0.519009747580	NA	-0.2811561878195

##	[56,]	-0.1889663347887	0.747143177812	NA	-0.3058694755573
##	[57,]	0.0783780177254	-0.868756891723	NA	0.3681268238010
##	[58,]	0.2028570805519	-1.779790828545	-0.2092442365744	NA
##	[59,]	-0.5247952963623	NA	3.2910684134908	NA
##	[60,]	NA	0.568813352282	0.4971995158568	-0.9779560470877
##	[61,]	-0.7257159110455	-1.908241446977	2.0486408890218	NA
##	[62,]	NA	0.267951249055	-0.6558055622241	-0.5604231431108
##	[63,]	-0.2094736650773	-0.542633770000	-0.9143416958027	-0.1495887019978
##	[64,]	NA	NA	-0.2134087697214	-1.2659970090500
##	[65,]	0.0054016267062	-0.418411608648	0.0102541184064	0.9301889198152
##	[66,]	-0.6741550801108	0.118427444999	0.6485257944044	NA
##	[67,]	-0.1283231705177	0.254916244544	-1.3809366327551	1.2961696857384
##	[68,]	-0.4405581235742	-0.268316294180	1.1573134002588	-0.0191504009921
##	[69,]	-0.8914476213525	-1.128446443478	0.1717965639073	-1.8513857826822
##	[70,]	0.2559409808590	-0.894418384977	NA	-1.4610010893308
##	[71,]	1.9943649139142	-1.907959127422	-1.1265029018032	NA
##	[72,]	1.1558731944992	-2.243821311833	1.0911990313065	-0.1466572282159
##	[73,]	1.1891247381448	1.209376990885	0.3265426441770	0.1895394120444
##	[74,]	NA	0.148984049298	NA	-0.1754830151113
##	[75,]	1.0111174299102	0.339328249833	NA	-0.8550731230762
##	[76,]	-2.1665385333901	0.370117204130	-0.1835143368163	-0.5300800782369
##	[77,]	0.4405920816657	NA	-0.1528730211313	NA
##	[78,]	-1.0403393251321	-0.019689053011	-0.0464683149018	0.2190056741993
##	[79,]	1.5294692086479	-0.693981874217	0.3051282223722	0.8327993963402
##	[80,]	NA	-0.594451603611	NA	NA
##	[81,]	-1.2744484895652	NA	1.7781537332376	NA
##	[82,]	-1.9036910962989	0.387962339984	-0.2175994445824	1.6186779909783
##	[83,]	NA	0.409997410174	0.5902396493894	1.0340952282170
##	[84,]	1.1378066670879	0.453886432112	NA	0.4565102789196
##	[85,]	0.8122065460281	1.113090551210	-0.5907104450915	NA
##	[86,]	1.0111459203271	-0.081434674301	-0.7192399113984	NA
##	[87,]	-0.7376706388911	NA	1.5289502818149	NA
##	[88,]	NA	0.232071485284	-0.3489872084105	0.5670350054500
##	[89,]	NA	1.544405577332	1.0494496446011	0.0643721482992
##	[90,]	1.4335977926739	-0.855634673753	NA	-0.2245522190302
##	[91,]	-0.1893261664499	-1.036291924949	-1.6032921929500	NA
##	[92,]	2.2228343643104	1.452775466883	-0.7687732301308	0.6541819092695
##	[93,]	NA	1.366997145615	0.7619402885629	0.7128419063448
##	[94,]	1.5490244914406	2.184264860740	-0.5856569387264	NA
##	[95,]	-1.7321197538091	NA	-1.0938740460356	0.9668329748777
##	[96,]	1.4740874308469	-0.915254663524	1.8772183531074	-0.7419291303729
##	[97,]	-0.2454173463310	0.239253893354	0.3888213831028	-0.5730557001225
##	[98,]	2.7068988401218	NA	NA	-0.1652048810456
##	[99,]	NA	-0.183278808325	NA	NA
##	[100,]	0.3444344594170	NA	-0.8715364294574	NA
##		[,45]	[,46]	[,47]	[,48]
##	[1,]	NA	NA	-2.017194195202	1.428962475549
##	[2,]	3.068460541518	-0.5259649087901	NA	-0.226690624839
##	[3,]	0.816554029658	-1.0474742406944	0.905134241727	NA
##	[4,]	NA	-0.7728524835320	NA	-0.308453068397

##	[5,]	NA	NA	-1.024743823220	NA
##	[6,]	0.564922153741	-0.5433884114987	0.382508517219	NA
##	[7,]	NA	-1.6687484853974	-0.455810249238	-0.586162147134
##	[8,]	0.600699460628	-0.5859147056838	0.742479679508	-0.710463698049
##	[9,]	NA	-0.5463395533871	NA	0.213135941767
##	[10,]	0.762509525753	1.9748764122211	0.101618496479	0.063264126662
##	[11,]	NA	0.6512527431393	NA	-0.194431886262
##	[12,]	NA	0.0831728919994	NA	NA
##	[13,]	-1.100248874192	-0.4272020208622	2.469051459232	0.393693770565
##	[14,]	0.065271690891	NA	-0.477573329912	-0.091107044492
##	[15,]	0.259751415833	-0.6185636601194	0.096306596198	-0.754411699917
##	[16,]	1.607464660422	0.1873743644315	-0.109644140836	0.249320527698
##	[17,]	-0.806635162472	NA	0.114067007471	-0.571469841084
##	[18,]	-0.418845849219	0.1076871182327	1.628786229530	0.184650716303
##	[19,]	NA	NA	NA	0.635154806767
##	[20,]	0.099454741899	-3.0734290306677	0.015548852938	0.585137615708
##	[21,]	NA	0.6128229609457	-1.273354162369	0.793446723123
##	[22,]	0.772220896267	NA	0.826539317486	-2.771977661028
##	[23,]	NA	0.5041102955248	0.376318402974	-0.219162280244
##	[24,]	NA	-0.4189840433355	-1.517483851984	-1.638565950463
##	[25,]	-0.193019691195	-0.5564579236996	1.126997064705	-0.346787307417
##	[26,]	1.253329609302	NA	NA	1.443759349069
##	[27,]	-0.107047955100	NA	1.718157089990	-0.229836450423
##	[28,]	0.978734485960	0.2465106714300	-2.531857458763	NA
##	[29,]	-1.827718038751	2.0328833167177	-2.415910969516	0.646884973208
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##	[33,]	NA	NA	0.864151791737	-0.781837518292
##	[34,]	NA	NA	NA	NA
##	[35,]	0.518088754928	0.4784113623926	1.556348796859	-1.008682667314
##	[36,]	1.508439802735	NA	1.981461508646	-0.503914051121
##	[37,]	0.272381530384	-1.1208489294629	-0.748282126330	-0.018965808881
##	[38,]	-0.556670854487	NA	-0.523252028489	0.080953950750
##	[39,]	0.881682617342	0.4101923253010	NA	-0.302148798454
##	[40,]	NA	-0.9932614786090	0.518340280363	-0.144613482290
##	[41,]	NA	0.2970602055916	0.376265204044	0.206996470137
##	[42,]	NA	0.5478496911104	0.540357895181	1.464069207051
##	[43,]	NA	NA	1.049386119459	-0.682262754431
##	[44,]	NA	-0.0913903746472	NA	0.233820895155
##	[45,]	1.667654178984	NA	1.528853719877	-0.050592340375
##	[46,]	-0.495532997486	NA	NA	NA
##	[47,]	NA	1.2334852387761	NA	NA
##	[48,]	-1.255341575698	-1.3063665619708	NA	0.101730567543
##	[49,]	0.989286159813	0.3013198503450	NA	NA
##	[50,]	-0.585999404163	-1.4507876565185	NA	NA
##	[51,]	-1.000481304862	NA	-0.265570663029	NA
##	[52,]	0.390595989607	NA	-0.756397306781	NA
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##	[54,]	0.863310112179	-1.0033210588306	-0.319856082559	-0.984348801830

##	[55,]	NA	-0.3261702902996	-0.477702668468	1.596911152823
##	[56,]	0.614321624136	0.5655453201881	0.629129408369	-0.859482982915
##	[57,]	-1.156031814384	1.7536344587071	-1.554693814081	-0.737906882614
##	[58,]	0.990778330181	-2.8463560145618	NA	NA
##	[59,]	NA	NA	NA	NA
##	[60,]	NA	NA	0.897819877403	0.693396347105
##	[61,]	-0.064232545807	NA	NA	-1.177946365891
##	[62,]	-1.704856902559	-0.7789679030498	-1.114728707850	1.018064665718
##	[63,]	1.116939680335	1.1714156791177	-1.473170478956	-0.113944055783
##	[64,]	-0.339718841974	NA	-0.731914472957	0.195881371312
##	[65,]	-0.314435917488	NA	NA	0.119913837550
##	[66,]	NA	NA	NA	1.891056618181
##	[67,]	NA	-0.9092625045898	-0.933524297610	-0.572256606031
##	[68,]	-0.521758784076	0.8026333139953	0.610802289684	-0.885968407571
##	[69,]	1.146874192776	-1.5076023876185	1.128303964656	-1.453712534633
##	[70,]	NA	-0.1489807662102	1.169836429064	-0.701616968648
##	[71,]	-0.500091313007	-0.1112814520352	0.418992383661	0.941217768465
##	[72,]	-0.066402070333	NA	0.760790045700	NA
##	[73,]	0.725779131474	-0.2402219685836	0.072381131611	0.265839616583
##	[74,]	0.777714377716	-0.2628242027910	NA	-0.906755104177
##	[75,]	0.913576728773	-0.7666446986649	0.954109096028	NA
##	[76,]	0.443227277413	0.6379866490710	0.634178715718	-1.733104830392
##	[77,]	-0.302084806079	NA	NA	-2.351102239668
##	[78,]	NA	-1.5356933227435	-0.800840861839	-0.528304665951
##	[79,]	0.245173726163	-0.3145645123059	-0.822366664655	NA
##	[80,]	-0.638930865960	-1.0336907977149	-1.104370408638	-0.220869929139
##	[81,]	NA	1.0816027965960	0.718187794210	NA
##	[82,]	1.049876375792	-0.2616200807348	-0.053756512945	-2.307053180623
##	[83,]	-0.101467239900	0.2089998738165	NA	1.228327632900
##	[84,]	1.041633889585	-2.9665869013993	-0.262907160447	0.301127069602
##	[85,]	-0.199667945912	NA	-0.324525466009	-1.923646293171
##	[86,]	NA	NA	-0.719029723072	0.427370532099
##	[87,]	-0.204884769482	-1.2746698403555	0.335153705041	NA
##	[88,]	0.414121332045	-0.8550584684994	NA	0.778610999794
##	[89,]	1.002339999418	0.1030886315503	-1.379736064653	NA
##	[90,]	0.123601562858	0.3338650166263	0.083683283117	0.011887593357
##	[91,]	0.990434396801	1.2444089210204	-0.485478956717	-1.582678549507
##	[92,]	-1.179949706424	0.0018625959753	1.333177276761	0.525711286855
##	[93,]	0.024923305740	0.7547667939615	-0.133133152092	0.543417636085
##	[94,]	0.029573837867	NA	0.097810114740	-0.536890429744
##	[95,]	NA	1.1268978767663	1.539744371133	-0.062475657905
##	[96,]	3.210914952270	0.0438963417391	0.572771153437	-0.458393617646
##	[97,]	NA	-0.1739298807193	-1.157468129541	NA
##	[98,]	0.098053705817	0.3230467834411	NA	0.665427676181
##	[99,]	NA	NA	NA	NA
##	[100,]	-0.493475472925	-0.2299103299837	NA	NA
##		[,49]	[,50]	[,51]	[,52]
##	[1,]	1.9694473966507	1.089618179497	-0.0961136149183	NA
##	[2,]	0.8306236085863	-0.184042484276	-0.1009527326098	-1.366458174908
##	[3,]	0.4352358863480	0.043093754941	-1.3280968031658	NA

##	[4,]	NA	NA	NA	1.600596264744
##	[5,]	NA	NA	-2.8425707573378	1.165564509642
##	[6,]	0.3939011195912	0.387761170108	-0.9182797440414	-0.395750040649
##	[7,]	0.3432162467352	2.028293078931	-1.3112872800409	1.236850106975
##	[8,]	0.4433375579353	NA	0.2094630605377	0.221801913855
##	[9,]	-0.8023339755430	NA	NA	NA
##	[10,]	NA	NA	-0.2734204462784	NA
##	[11,]	0.7045785276544	0.984995217691	0.3908801008843	NA
##	[12,]	0.4743816107109	2.287549666193	-2.3584213204589	0.711658630976
##	[13,]	-1.4931466188865	-0.517723554462	0.0634143476589	1.026033051908
##	[14,]	-1.3414161838306	NA	-0.6254173351847	-0.436720689666
##	[15,]	-1.1168967789666	-1.276878219610	NA	-0.404022223272
##	[16,]	1.4478198909880	0.096198964248	-0.7828321770972	0.729175164965
##	[17,]	NA	-0.052463184827	1.0969497218953	NA
##	[18,]	-0.8202176480188	-0.581162067245	NA	0.515338075204
##	[19,]	NA	NA	0.1040342523956	-0.926595728199
##	[20,]	NA	0.262290719708	0.3252121608963	0.624071348320
##	[21,]	NA	NA	NA	2.014710401093
##	[22,]	-0.8396831585073	-0.294483309889	0.3674894270512	-1.139560256262
##	[23,]	1.1330686158543	-1.396906505709	1.8810239044125	0.989225344966
##	[24,]	0.5004942363620	NA	1.0456413082730	0.206482903544
##	[25,]	1.5471531044683	NA	-0.3577207519257	0.900207756380
##	[26,]	-0.1315302638217	NA	NA	NA
##	[27,]	NA	-1.191745013720	-2.2998410041758	2.700871314017
##	[28,]	-1.9382362300108	1.475999792981	0.0283631375732	-0.238453572598
##	[29,]	0.6851331180117	0.471949365918	0.3121432192255	0.629760339958
##	[30,]	1.7445869982249	0.112016116193	-0.1743593444345	-0.046605815441
##	[31,]	1.2174024831780	0.015936555686	-0.4131320556687	NA
##	[32,]	NA	NA	NA	-0.686223892067
##	[33,]	-0.7930583932543	-0.156051806219	0.4578563822904	-0.867748830972
##	[34,]	-0.2968735998930	-0.249471307559	2.4500928755014	-1.145165144151
##	[35,]	0.4787371809233	NA	-1.7217104352383	-2.126420689260
##	[36,]	-1.1844993874567	-0.563350159293	NA	NA
##	[37,]	-0.4788765669719	0.610344985385	-1.2613505283818	-3.204481973461
##	[38,]	-0.6765395884042	1.391137502380	0.8386957616338	0.623294934573
##	[39,]	-0.2305454600007	0.764595791447	0.5897779183620	0.709782553772
##	[40,]	NA	NA	0.6936970187784	-0.705334475369
##	[41,]	0.2775286373172	0.223391835184	-1.0810502938620	0.864096464574
##	[42,]	NA	1.153435425612	NA	1.006657178033
##	[43,]	NA	NA	-0.3095393154943	-0.948403042942
##	[44,]	NA	0.667169984191	NA	-0.849154706167
##	[45,]	NA	0.526771501340	-2.0863840176777	NA
##	[46,]	0.8759595996104	0.464968973169	0.4320922501855	0.114624876768
##	[47,]	NA	NA	0.6607826671760	NA
##	[48,]	-0.7634772287515	0.602518372321	-1.3395069084102	-0.476887682456
##	[49,]	-0.1342575282955	NA	0.6052180138640	-0.934115423311
##	[50,]	NA	1.545855548933	-0.8236296577110	-1.185554384908
##	[51,]	1.7959663278027	-0.670340797084	NA	NA
##	[52,]	NA	-0.690297338632	-0.2021743761658	-1.982459735980
##	[53,]	NA	NA	0.3076164033914	NA

##	[54,]	-0.3864969506732	-1.146802723015	0.8166423945911	NA
##	[55,]	-0.6172534999090	NA	NA	-0.631818580026
##	[56,]	-0.2399967929535	NA	1.5019298738227	-0.440625205349
##	[57,]	0.5537856754378	0.317377040073	NA	0.767235429520
##	[58,]	-2.1657954144772	0.234380971752	-0.5446720608445	1.354888581768
##	[59,]	NA	-1.739862232459	-1.3228707938621	NA
##	[60,]	0.9236411801447	1.784678506205	NA	NA
##	[61,]	0.7004582636737	-1.066171703788	0.7580675409725	-0.561397232596
##	[62,]	1.1113319323877	NA	0.1360875446027	2.842204588971
##	[63,]	NA	-0.398795686378	-0.6571112898544	NA
##	[64,]	-1.1948265633180	0.050783134622	0.4400852509215	NA
##	[65,]	0.1981085957359	3.111464763512	NA	0.351779379097
##	[66,]	-1.3723968282571	-1.361054190696	-0.7062662074516	0.591123668576
##	[67,]	-0.2384711251850	1.213033193379	1.3703570643585	NA
##	[68,]	0.4853613094650	-0.016600600915	NA	NA
##	[69,]	NA	NA	NA	1.288246645129
##	[70,]	NA	-1.211690248642	-0.0994196060580	NA
##	[71,]	-2.2537038370488	1.025512361963	NA	-0.376926944163
##	[72,]	-1.0793059866936	-1.940314850819	-1.7971311460492	0.913456945139
##	[73,]	-0.9787859669858	NA	NA	NA
##	[74,]	-1.2193716666090	-0.508053382623	0.1113665590011	NA
##	[75,]	0.6190590121799	0.815564448308	-1.7389308534629	NA
##	[76,]	1.8502314647623	-0.604307477615	0.0364974789433	NA
##	[77,]	-0.2327409316784	-1.162425240913	1.0920265543614	NA
##	[78,]	-1.6201929985259	-0.724885876392	0.2564368732796	1.422645089256
##	[79,]	-0.3338959267524	NA	0.9519360065386	0.867933029386
##	[80,]	0.0201983192196	-0.085205385572	0.8774976443597	NA
##	[81,]	NA	NA	-0.1639894386122	1.551875876443
##	[82,]	1.3895400522704	NA	-0.0011186741448	-0.371982978845
##	[83,]	-0.9036109937279	-1.527715098704	NA	1.122141461345
##	[84,]	0.0080352834738	0.317692640767	-1.3311741724574	-0.478287083106
##	[85,]	NA	-0.730465605968	0.9705758361510	0.405732345439
##	[86,]	-1.6285513287542	-0.067860711887	1.8214821143362	-0.771117475309
##	[87,]	-0.4378022781842	NA	0.7787369984434	-0.490556211898
##	[88,]	NA	NA	-0.8025899856893	-1.036239002371
##	[89,]	-0.1009807613289	2.052788594233	-2.0122151885576	-0.845096933761
##	[90,]	-0.0171604380185	-0.161731171488	0.9344291388537	-0.413394610189
##	[91,]	0.9858743667407	0.795465733207	-0.5349015053086	1.430805893677
##	[92,]	-0.2294617953448	NA	NA	-0.545748487210
##	[93,]	0.7646799157828	NA	1.4283809899212	NA
##	[94,]	1.0334193149262	-0.967422835462	1.4751743709467	0.225412591974
##	[95,]	NA	NA	-1.6901135427374	0.800995270711
##	[96,]	-0.1892876099171	0.116769090707	0.7262111422257	-0.059102612350
##	[97,]	0.7228148920092	1.018252380955	-0.1220436009757	2.299169815609
##	[98,]	-0.5014707192114	NA	-0.2946952480137	NA
##	[99,]	-1.8525794126835	-1.291242853818	-0.2032885533243	0.546189808210
##	[100,]	0.5785083190239	NA	NA	NA
##		[,53]	[,54]	[,55]	[,56]
##	[1,]	NA	1.260938352685	1.0424609857610	2.367919405599
##	[2,]	-0.321393982516	1.619771799162	0.4700160960319	-1.119974872575



##	[3,]	-1.145102281297	NA	0.4929216492216	-1.103109435237
##	[4,]	-2.138941065957	-1.319970487984	NA	-2.734181111434
##	[5,]	NA	0.485893942599	-0.7350283284638	-0.117945728550
##	[6,]	2.282866405181	1.033416017660	-0.8075446587850	1.150436495847
##	[7,]	NA	-0.643006435256	-0.9748435090984	NA
##	[8,]	1.147856671928	0.107448321203	0.8578251079108	-0.132205115181
##	[9,]	0.394242055501	-0.082904714239	0.1478188971590	0.684614198330
##	[10,]	0.686706435618	-0.063405370113	0.2628670545788	1.642953803679
##	[11,]	0.065083503715	NA	-1.6852135197142	0.066490420530
##	[12,]	0.192826512448	-0.425626890364	0.7481152458623	0.638484975733
##	[13,]	-1.331028352625	-0.571359779638	-1.1860168976078	-0.570280766887
##	[14,]	-0.115402970976	NA	1.0174534586721	NA
##	[15,]	NA	NA	-0.2638622578800	NA
##	[16,]	NA	-1.114252838467	NA	NA
##	[17,]	0.646326347948	0.641795214031	-0.9480901007265	-0.959421475001
##	[18,]	0.559748522032	NA	-0.3766120723616	-1.025816909117
##	[19,]	2.115373564361	-0.308071055363	1.3662960373906	-0.245894698982
##	[20,]	0.274319863795	-1.519553708579	0.0018693304724	NA
##	[21,]	1.788067502164	-1.204200339718	NA	-0.508607557506
##	[22,]	-1.007816418776	NA	0.3110039035987	0.717943977751
##	[23,]	-0.104970920373	NA	0.1483647300239	NA
##	[24,]	-1.327664348158	-0.628410272979	-0.7273791512419	0.941075754141
##	[25,]	0.355200015577	NA	-1.8645658722842	-1.156945151522
##	[26,]	0.128980261288	0.923084163969	-1.4847665784589	1.201943062304
##	[27,]	NA	-0.334456594420	NA	-1.191283204489
##	[28,]	-0.363122599301	1.602089242418	-0.8191079262245	-0.942267581880
##	[29,]	0.842173162337	0.698053875591	NA	NA
##	[30,]	0.665348829996	NA	NA	0.267703135018
##	[31,]	-0.251607481252	0.526549391771	-1.4348700974842	-0.478616384483
##	[32,]	NA	2.264244253263	NA	-1.369383271513
##	[33,]	NA	0.540674959554	NA	-0.921351676252
##	[34,]	0.534231823013	-1.008329800384	-0.7859823013155	NA
##	[35,]	-0.091581941801	0.770896173020	0.2476169036533	-0.716094522372
##	[36,]	1.351232359857	-1.252319895574	2.0880061525648	2.093471384755
##	[37,]	NA	-0.232403821977	-0.4293686357568	-0.951834682527
##	[38,]	NA	NA	NA	1.375371765443
##	[39,]	1.746636908809	NA	-0.2864523990738	NA
##	[40,]	-0.534156596410	0.739259464776	NA	-0.034837915533
##	[41,]	-1.582243900977	-0.252228591818	0.4205482986578	NA
##	[42,]	NA	-0.995948581590	1.4554668785548	1.164839098919
##	[43,]	-0.816291145957	0.139769355566	NA	NA
##	[44,]	NA	-1.304725668496	-0.6229523636654	NA
##	[45,]	NA	-0.292820294827	0.4881920807540	-0.529607649505
##	[46,]	-1.046287130165	0.182059427545	-0.3921816921973	NA
##	[47,]	-0.108840760103	NA	NA	0.117184996996
##	[48,]	-0.567565155498	-0.829144849168	-1.2424773335443	-0.520307258696
##	[49,]	-2.012767205142	-0.213885953231	NA	0.048391013137
##	[50,]	NA	0.903839643042	0.5634548405850	-1.386019135978
##	[51,]	-1.379885122139	0.378343861554	1.2664226041014	-0.226736605283
##	[52,]	1.218059353615	0.455951208796	-0.3189184949671	0.985353571848

##	[53,]	1.857306652576	0.837926987508	1.0116263962932	-0.232196739997
##	[54,]	NA	NA	0.0500570861015	-0.198723812282
##	[55,]	-0.592987714720	0.031518647636	-2.0014697429237	NA
##	[56,]	1.372302769834	0.931608643628	0.8602920348914	0.278262358600
##	[57,]	NA	1.788356075743	-0.5073276915296	0.926951641623
##	[58,]	-0.193777494785	-0.412724096714	NA	NA
##	[59,]	1.180055945426	-0.523421168786	-0.5571003791393	0.816404775739
##	[60,]	-1.299268622208	-0.062705943711	0.6773673325460	NA
##	[61,]	-0.554050230150	-0.709310833198	-0.1356779628496	NA
##	[62,]	-0.374805890239	NA	-1.1363816192731	-2.419990149588
##	[63,]	0.563439071415	-0.209380339184	-0.6773387830131	-0.745269682220
##	[64,]	-0.350049092380	-1.029697857607	NA	1.012027655182
##	[65,]	NA	-0.181375482147	-0.8412292342217	0.907388726640
##	[66,]	-0.160841555593	0.987946415056	-2.4084048985004	1.665484162767
##	[67,]	NA	-0.953930341392	NA	-0.888760017101
##	[68,]	-0.841008664036	-2.512061957463	-0.3328520861140	2.522429403176
##	[69,]	-0.129454977315	0.314036159730	NA	1.421725665786
##	[70,]	NA	NA	-0.0046532629262	-1.766891815873
##	[71,]	-0.623211859749	-1.426367349126	-1.0546094271364	0.716112524681
##	[72,]	-0.532940700484	NA	-0.6067876477848	1.457529716294
##	[73,]	NA	-1.177803629344	-1.0000100372035	-1.006682365683
##	[74,]	0.390931708521	1.400035892220	NA	-0.936249932040
##	[75,]	NA	0.137955978442	-0.0126485799256	1.177360687035
##	[76,]	-0.077646700463	0.494265647826	NA	-1.270671255376
##	[77,]	-1.989708302567	-0.457132748964	0.0293049201820	0.201807208940
##	[78,]	NA	1.098926186751	0.6401041854718	-0.453554065670
##	[79,]	1.478336591266	NA	0.7113556097829	NA
##	[80,]	NA	NA	NA	-1.195635522115
##	[81,]	0.802670973330	-1.102947050969	0.8134365949259	NA
##	[82,]	1.178522200327	NA	NA	0.074725589381
##	[83,]	NA	-1.969656179392	NA	-0.038645824301
##	[84,]	2.171317423966	0.622986279309	-0.3160126702021	-0.344726473759
##	[85,]	NA	NA	-0.1599810552414	1.756667318215
##	[86,]	NA	NA	NA	1.098090487189
##	[87,]	0.467135320525	1.126962015205	-0.2725187653950	0.616861012561
##	[88,]	NA	0.051317545126	1.3514106326333	-1.412761565895
##	[89,]	-0.320217360194	-0.240525392289	NA	0.534419963838
##	[90,]	-0.628021019336	0.531746816604	-0.1830731457690	NA
##	[91,]	1.212934391442	0.468078191696	NA	NA
##	[92,]	-1.218261211945	NA	1.2567685151532	NA
##	[93,]	NA	-0.755661648598	1.2773193478665	NA
##	[94,]	NA	-0.814683380008	0.2056934586078	-2.241756189162
##	[95,]	-0.349279809272	NA	-1.1146994935724	-0.982253101348
##	[96,]	NA	2.845663254666	NA	0.858565005521
##	[97,]	-0.607767032575	NA	-0.5430833733497	0.995646528170
##	[98,]	0.117495668602	-1.531874581932	-0.0892336171555	NA
##	[99,]	1.506570482052	NA	-0.0975811267868	-0.415613386167
##	[100,]	NA	-0.861286550808	-0.5814819632635	NA
##		[,57]	[,58]	[,59]	[,60]
##	[1,]	0.3074032152078	0.853407787096	-1.05694360734	NA

##	[2,]	-0.2178733866220	0.413893418767	NA	NA
##	[3,]	0.8688487775561	2.109208062605	NA	0.3272317773693
##	[4,]	1.6266414309032	0.873853764219	NA	-0.5738006410136
##	[5,]	-0.0067887329153	NA	NA	0.7731572251221
##	[6,]	1.1656902493582	-0.746813691765	1.38952213904	1.2098427972939
##	[7,]	NA	NA	-0.48115727816	0.0065836670753
##	[8,]	-0.0915637652777	NA	0.10236756851	NA
##	[9,]	-1.4040985964740	NA	0.18872176817	-1.3172826948780
##	[10,]	-1.1705006426619	0.606609607624	NA	NA
##	[11,]	-0.1278104147797	1.203018643951	NA	NA
##	[12,]	-2.7484106616141	0.331744202142	-1.96447244582	0.0665768854262
##	[13,]	-0.5522521711299	NA	0.62209332278	NA
##	[14,]	-1.2088456292143	0.524012913196	1.02039054441	-0.2701272694130
##	[15,]	0.3076933874002	0.389256903764	1.89442787587	0.5751773543461
##	[16,]	-1.2297413536319	0.978894056767	-0.36585208444	NA
##	[17,]	NA	-0.377225899179	-1.23097968183	-0.8892610793329
##	[18,]	0.4597772385170	1.214280025153	-0.48788567789	1.0396887588185
##	[19,]	0.9793568803952	-1.212873037977	NA	0.8960561392331
##	[20,]	0.3541117381966	1.157781096630	NA	-0.5484222443920
##	[21,]	-0.2737850615236	2.174725804871	NA	0.7121764064256
##	[22,]	NA	0.196874333575	NA	NA
##	[23,]	0.2953097333804	-1.653539369905	1.55665219172	-1.1296553919590
##	[24,]	-0.1020547755918	1.788598418775	NA	NA
##	[25,]	0.6603464480609	-0.437956260845	NA	0.9166457905067
##	[26,]	-1.5511521590435	1.001931048955	NA	1.7446902460716
##	[27,]	-0.4601991204132	-0.070557101068	1.19455322201	1.2104027578980
##	[28,]	-0.7392516692424	NA	1.95282511218	0.7654881022604
##	[29,]	NA	0.581347396299	-0.22901349217	-0.1752412723938
##	[30,]	0.3013136297767	-0.551815276328	-0.14941748071	-0.9090716725771
##	[31,]	0.1269227731077	1.905286266598	0.43039301501	NA
##	[32,]	NA	-0.720616615196	1.23863079342	NA
##	[33,]	-1.9558822919287	-0.161268513098	-0.35504929761	2.0408338825358
##	[34,]	0.7244754271279	2.475944942440	-0.27929764879	NA
##	[35,]	1.0429943046991	0.440514203858	0.59780688755	0.5079477023036
##	[36,]	-1.1545191483589	NA	NA	-0.7010252633740
##	[37,]	-2.5586997518346	1.897361898544	-0.03268736103	-1.7346351255698
##	[38,]	2.3011891777789	NA	NA	-0.5669963908185
##	[39,]	-1.6515354910514	0.561155629504	-0.71414677047	-0.0228221125479
##	[40,]	0.6353508850178	NA	-0.21276403530	NA
##	[41,]	-0.2284477251214	0.653918882728	-0.37476947537	-0.2024865082852
##	[42,]	NA	NA	0.51940264673	NA
##	[43,]	NA	0.714830091588	1.66007882207	-0.2930500348106
##	[44,]	-0.6278322957176	-0.443147182115	0.54429299276	-0.1273524984488
##	[45,]	0.5154875766683	1.364012757399	-1.12472124771	NA
##	[46,]	NA	0.938155079622	-0.22716645638	NA
##	[47,]	0.7127745069834	-0.993691753726	NA	-0.8759116957720
##	[48,]	-0.0480039472875	0.898957946593	-0.48660968583	NA
##	[49,]	1.1981563378419	0.456726293409	NA	1.1113143884861
##	[50,]	-0.9707841998457	NA	-0.91282783916	NA
##	[51,]	0.3614077917797	NA	NA	0.4812591786631

##	[52,]	NA	0.165237974432	-1.07087061810	-2.2003009159821
##	[53,]	0.5170085786526	-0.339191946102	1.69613548390	NA
##	[54,]	NA	-0.056926882878	0.93611596533	NA
##	[55,]	1.5359087103155	0.019951572165	-0.71834799549	0.3451122335237
##	[56,]	-0.1189921750134	-2.191490639781	NA	0.6191657667273
##	[57,]	1.3620042108076	-0.763707904087	1.00735863540	0.8078065816870
##	[58,]	-0.9896391983154	-0.636033068083	1.18521630244	NA
##	[59,]	NA	0.581421121377	-0.14366817415	NA
##	[60,]	-1.1851676942406	1.009651667853	NA	-0.6173254680760
##	[61,]	NA	-0.791253468881	0.10648975615	NA
##	[62,]	-0.7454740351737	NA	-1.56586854621	0.0323490281915
##	[63,]	-1.7207786665205	-0.706336256319	0.47234930479	0.0561201783236
##	[64,]	1.5330781451163	NA	1.20841993037	NA
##	[65,]	NA	-0.547576898720	NA	NA
##	[66,]	-2.3065466207997	0.190341417223	-1.27168293082	-0.2399768465189
##	[67,]	NA	NA	NA	NA
##	[68,]	-1.5683867916052	-2.337684620317	NA	-0.3419044733820
##	[69,]	2.0757157548602	0.770621368477	NA	NA
##	[70,]	NA	0.548345442677	-0.90790835180	0.3378831248918
##	[71,]	-0.7505319724260	0.268506309332	NA	0.9425549281115
##	[72,]	-1.3925869362970	-1.473898924545	0.11036438719	NA
##	[73,]	-0.6430826868190	-0.404705006537	-0.23885403207	NA
##	[74,]	-0.5983770167150	NA	1.28645427164	NA
##	[75,]	NA	-1.211534981445	NA	-1.5079222972840
##	[76,]	0.9532023677472	-2.050817383665	0.68098218565	NA
##	[77,]	-0.2965632681754	0.362380307675	1.40439763623	-1.0357473269569
##	[78,]	-0.1277207949214	-0.265483542763	-0.12944499626	0.5911184384449
##	[79,]	0.1093749002689	0.232818412735	0.42464944501	NA
##	[80,]	-0.1538546234358	-0.152029090191	NA	-1.3746463719860
##	[81,]	NA	0.272905852828	-0.25168715426	NA
##	[82,]	-0.0638339793887	-0.313262027984	-0.99282074086	NA
##	[83,]	0.8057654941613	-0.898084428320	0.20107761950	NA
##	[84,]	NA	0.931511979103	-0.79114415551	NA
##	[85,]	NA	-1.409761292198	-0.96981139629	-1.5549114456698
##	[86,]	0.1170010101543	NA	0.51497435800	-1.2634354352288
##	[87,]	1.3652338510788	NA	0.68733154162	1.4138936362756
##	[88,]	0.4486359031738	NA	NA	-1.0953044173002
##	[89,]	-2.1037003447573	0.773708837400	NA	0.8054452675832
##	[90,]	1.3442856190165	NA	0.28579944183	NA
##	[91,]	NA	NA	NA	0.4081562061210
##	[92,]	-0.0426003734954	1.689697589705	NA	-0.1239300210624
##	[93,]	1.3920701544374	-0.456370764380	1.28134892541	NA
##	[94,]	1.4341460428009	-0.333860637201	NA	0.3062761896254
##	[95,]	0.8564277973683	NA	NA	-0.3851044898516
##	[96,]	NA	NA	NA	NA
##	[97,]	NA	0.127483423488	NA	-0.6378743055530
##	[98,]	NA	-0.398814150862	0.26874659283	NA
##	[99,]	NA	NA	-0.57481170589	NA
##	[100,]	0.4112239321013	0.576203214686	-0.48647826613	NA
##		[,61]	[,62]	[,63]	[,64]

##	[1,]	-1.5340657899736	-1.1218857482003	-1.601825100414	NA
##	[2,]	NA	-1.3857301572815	0.149258712168	-0.527335761416
##	[3,]	0.6821383589061	1.1716565824822	-0.407414744493	NA
##	[4,]	NA	1.6390394925765	NA	-0.724609169640
##	[5,]	-0.6574861956148	NA	0.313639749294	NA
##	[6,]	0.6596366911123	-0.3422738293519	-0.822523685340	0.310804719551
##	[7,]	-1.1020244394790	NA	-0.439592971045	0.212162219919
##	[8,]	1.8398037571123	NA	1.075784550927	NA
##	[9,]	1.0283704546933	-0.3062996527295	-0.463807070858	0.090107202338
##	[10,]	-0.2236442273604	-1.0332225013071	-1.393817816001	NA
##	[11,]	-0.7851320776524	-0.6894526570470	NA	NA
##	[12,]	0.2042435280605	NA	NA	NA
##	[13,]	-0.9178140518951	0.9586551853519	-0.971762651820	NA
##	[14,]	NA	1.8366691380005	1.207763545862	NA
##	[15,]	0.6417647433497	-0.5619224783808	1.126102645997	NA
##	[16,]	NA	-0.1788903893365	0.657687956058	-1.107612142182
##	[17,]	-1.6593024191233	NA	-0.098778141993	0.943248020487
##	[18,]	-0.3195184702804	NA	-1.034338705506	0.199191880615
##	[19,]	1.7176866511425	-1.2369095708437	0.430215364279	-1.823822668784
##	[20,]	0.4633461587356	NA	-0.225508055980	NA
##	[21,]	NA	NA	-0.652619580595	0.341466988116
##	[22,]	NA	-0.5416356438468	0.984645180546	0.320568082967
##	[23,]	-0.8199228198879	-0.8074803326195	0.091972601653	1.362414762970
##	[24,]	1.1870341511310	1.2800941035074	1.623653869874	1.268023071178
##	[25,]	1.6230461666778	NA	-0.250308627425	0.471236518721
##	[26,]	1.0223893816840	-1.3087227791743	NA	-0.312562808656
##	[27,]	0.6974210764604	0.1042462659021	1.391598153977	0.027556656665
##	[28,]	-1.2125603482061	NA	NA	-0.125391364320
##	[29,]	-0.4982378746759	-2.2453462087423	0.819624887218	NA
##	[30,]	NA	0.0996778385129	-2.007181399155	NA
##	[31,]	-0.8407735533516	0.9196028867181	-0.168049852976	NA
##	[32,]	0.7664436428309	1.1222893637081	0.701059738686	-0.362247085956
##	[33,]	0.8997972229061	1.1228786176558	0.245300982588	0.324837967017
##	[34,]	-1.1860928713365	-0.0101598634643	1.448043608176	0.106272259667
##	[35,]	0.9909237881365	-1.1728295095767	0.054623988067	NA
##	[36,]	NA	1.1518351653796	-1.375012285384	1.097895262445
##	[37,]	0.0134142048008	NA	NA	NA
##	[38,]	-0.5847462830774	-0.4697099527856	NA	-0.728392878884
##	[39,]	2.2432365803068	NA	-0.907216802933	0.975050012348
##	[40,]	0.6375296307120	NA	NA	0.203416424358
##	[41,]	-1.5695891474396	NA	0.075763993449	-1.550128440696
##	[42,]	0.5736148861240	NA	-0.508032095761	-0.336791028151
##	[43,]	-0.4298267765889	-1.2612987778489	0.549077223355	2.043420556166
##	[44,]	NA	NA	1.811903976996	1.252059835209
##	[45,]	-2.1103606557750	1.3362279132632	NA	NA
##	[46,]	-0.0804053169883	-0.1869572897566	NA	0.598294745912
##	[47,]	0.8366364230191	-0.5868056829636	-0.300182455375	-0.803897869087
##	[48,]	NA	-0.0018168153932	-0.509725256345	NA
##	[49,]	-0.2053385486311	NA	-0.833735694878	-0.294569369506
##	[50,]	1.4158233457568	NA	-0.979929435904	-1.554000507207

##	[51,]	NA	-0.1023091099449	NA	NA
##	[52,]	1.0521932149200	NA	-0.085098024837	1.238573737966
##	[53,]	1.2603147141797	0.7024541760628	0.716283155926	-1.010389540469
##	[54,]	NA	-0.7621933253595	NA	0.532006511918
##	[55,]	0.0013495370036	NA	-0.275707215337	0.859243736107
##	[56,]	-1.3834907069515	0.8057076682069	-0.967206705293	1.240212003774
##	[57,]	-0.2931556964755	-0.3407716553481	-1.531259351642	0.704124197421
##	[58,]	NA	-3.3051885223223	NA	1.096443873054
##	[59,]	NA	-0.0299869894730	1.832562582416	0.447383897115
##	[60,]	1.1650422745432	1.0147729305733	0.623840883741	NA
##	[61,]	-0.5198973083859	NA	-0.052818592611	-0.025887328862
##	[62,]	0.6400345044815	0.7501147181486	-2.257652829499	1.285414582923
##	[63,]	-1.2586159571057	-2.2218555057282	NA	-1.478399729570
##	[64,]	-0.1948969495114	1.6259051691721	NA	-0.122345734992
##	[65,]	-1.3834558331425	NA	0.184044774724	NA
##	[66,]	0.5429908391091	NA	-0.534791144025	NA
##	[67,]	-1.2087193730572	0.0908335736099	-0.019821527006	0.154474211756
##	[68,]	1.2524205349879	0.3132326419964	0.463536666905	-0.284191284123
##	[69,]	NA	-0.1778108391722	-0.062063569693	-0.507578937487
##	[70,]	-0.2510031815236	-0.2880970441393	-0.628731574357	-0.889120372241
##	[71,]	-0.1379579536691	-0.2214218369069	NA	0.530745353510
##	[72,]	NA	1.4163708058535	0.676127869580	-0.158889727733
##	[73,]	-0.1190862320186	0.6095577258233	0.820580456203	-0.915355763455
##	[74,]	0.2304076322238	0.0059613003671	-0.942551945390	0.714246634041
##	[75,]	-0.3179348009701	2.8942139908681	NA	NA
##	[76,]	0.1942491330421	NA	0.041649707775	NA
##	[77,]	0.5315749575484	-1.0998121156546	-1.769763011559	0.982089979811
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##	[79,]	-0.7907242550978	-0.5977699418932	1.602935854636	0.412867489670
##	[80,]	0.3219051062422	2.4253967060004	-0.132780492097	-0.068211449710
##	[81,]	NA	-1.7236534509217	-0.867826303380	1.634862496264
##	[82,]	0.8816291096312	-0.5450913675975	NA	-0.610186760273
##	[83,]	0.3898924700448	0.4550317149595	0.725888089139	-1.086899688383
##	[84,]	NA	0.7165179081986	0.627837528017	0.686093745797
##	[85,]	0.7983689660381	0.1163738051403	NA	-0.936382739753
##	[86,]	NA	NA	-0.957780686746	-0.676944188455
##	[87,]	-1.8313032306175	0.6189991839804	NA	-1.637351300931
##	[88,]	NA	-1.3155649709504	3.024849423081	-0.171157211051
##	[89,]	-1.1669386906677	0.9486896706050	0.333769686518	NA
##	[90,]	-0.8244693819937	0.5479681042274	-0.984619915768	NA
##	[91,]	NA	-0.5397040662459	-0.022405999717	NA
##	[92,]	0.7350013278834	-0.7750455251653	-0.375920591102	1.078923210568
##	[93,]	0.0613180272073	NA	NA	-0.200961199524
##	[94,]	0.6965181536578	-0.6944953361031	NA	NA
##	[95,]	1.1657021248176	NA	NA	1.568621935092
##	[96,]	-1.9902875565746	-1.6084103788635	NA	0.359632168219
##	[97,]	-0.1345931334658	NA	0.992048625793	NA
##	[98,]	-0.0371859099266	1.0081754186061	-0.820400276830	NA
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##	[,65]	[,66]	[,67]
## [,68]			
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## [2,]	1.1278679461265	-0.5498315136826	-0.3134016699966
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## [3,]	-0.2389651396069	0.9887845226796	0.5622198802354
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## [4,]	NA	0.3258508912816	-0.8363407923939
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## [5,]	-1.2120059682436	-0.9638730174298	NA -
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## [6,]	NA	0.3788341275969	0.0698068025764
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## [7,]	-0.1890296173530	0.2593321817385	-0.3702549702074
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## [10,]	-0.9460272415858	NA	NA
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## [11,]	-1.1852574925914	NA	0.2072343574394 -
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## [13,]	0.0522876117710	NA	0.7941711085172 -
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## [14,]	0.8115065526336	0.3757793825145	-0.3137740532072
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## [15,]	-0.8570591181819	NA	-0.7625080516081
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## [17,]	0.2351066504707	0.0322437875908	NA -
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## [18,]	-0.4985931604563	1.6912691519164	0.0293621387562
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## [20,]	NA	0.3372308549844	0.2687495679012
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## [22,]	NA	NA	-0.4527218338309
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## [23,]	1.0874900039533	0.7268172356695	NA
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## [25,]	0.0730767088907	NA	-0.5117042031457	
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## [26,]	-0.2342267720550	NA	0.3601876633281	-
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## [27,]	-0.3028426207104	NA	1.0111138435616	
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## [28,]	1.1049668861026	NA	0.7342788547084	-
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## [29,]	1.5297414892376	1.3538231297930	-0.0173794448629	
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##	[56,]	NA	-0.191922345708	1.625263967052	NA
##	[57,]	1.0340737410571	NA	0.679829079875	2.7536551851946
##	[58,]	-0.2093546649629	1.789496773516	-1.085173451974	0.5965112449802
##	[59,]	NA	NA	NA	-0.4006257374729
##	[60,]	0.1755380690257	-1.284561757256	-0.590233087612	0.7007206892290
##	[61,]	0.9687468297170	-0.059366474516	-1.133603201188	-0.9028161834776
##	[62,]	-1.9166294177860	0.518761151884	NA	-1.3514197802794
##	[63,]	1.0659874865829	0.301723405406	NA	NA
##	[64,]	-2.2805371822771	NA	0.185786216146	-1.4533684489241
##	[65,]	-0.3549161740217	0.468130786206	0.881805208134	NA
##	[66,]	0.4623815335965	NA	1.610110549172	1.4072272428221
##	[67,]	0.6589002239623	0.949310454089	2.814425635966	-0.9620141258732
##	[68,]	-1.5159703859809	-1.882806828489	NA	0.9552652570010
##	[69,]	0.4096717696691	NA	NA	NA
##	[70,]	-0.4696208135973	0.235738296389	NA	NA
##	[71,]	NA	0.146649325313	0.446137895796	NA
##	[72,]	1.9698296725395	1.355357846216	NA	0.3042444178700
##	[73,]	0.0695147087699	NA	-0.073584296268	-0.2568397856559
##	[74,]	0.6094389797563	-0.061183843021	-0.899018813381	1.1776310678701
##	[75,]	-0.0730913546448	1.420455064046	-0.707132567648	-1.3082280027482
##	[76,]	0.1215666950552	1.248827686177	NA	0.4174697604854
##	[77,]	NA	NA	-0.201270318796	-0.1852273434703
##	[78,]	-0.2580941042493	NA	NA	1.6874787554202
##	[79,]	-0.1932179236113	-0.800200603556	NA	NA
##	[80,]	NA	NA	NA	2.7061947937560
##	[81,]	-0.0123609797516	NA	-0.754021277606	1.5145904856977
##	[82,]	NA	0.348198749239	0.429537505325	-0.3252317352520
##	[83,]	NA	0.462439612773	NA	-0.3961960908314
##	[84,]	1.0021894052508	-0.237437307781	1.818768927813	NA
##	[85,]	0.2475352231858	-1.353786711990	-1.207047862672	0.5428085364688
##	[86,]	NA	-0.269839249315	-0.857017029549	0.5178212945436
##	[87,]	1.1366707965623	-1.855444777341	0.043200801493	1.6678852871558
##	[88,]	-0.5088564961089	-0.898177373966	NA	NA
##	[89,]	-0.7161685832404	1.334706496748	0.659459164804	-0.3798867038429
##	[90,]	0.1451917292170	NA	0.470915982002	-0.7582345155444
##	[91,]	-0.7106887484898	-1.187599840853	-1.046876599373	-1.1273695709979
##	[92,]	0.5914083119620	NA	-0.301669292916	NA
##	[93,]	1.0514843159718	NA	-0.755127147812	-0.4687557961714
##	[94,]	0.8386961745406	NA	-1.055899850867	NA
##	[95,]	-0.2516471024031	NA	NA	-0.3692778281467
##	[96,]	0.4128656963356	0.520300495541	1.133607823684	-0.4017469998727

##	[97,]	0.2261378182161	-0.580567702743	0.385071802797	-1.2492106908279
##	[98,]	-1.5920600327871	0.362611356371	NA	0.6645158799432
##	[99,]	0.5682418780650	-0.716590208520	NA	0.8072079477240
##	[100,]	-2.0467067872141	1.154970257747	0.312040240163	-1.0256511417778
##		[,77]	[,78]	[,79]	[,80]
##	[1,]	1.312906972051	-0.4133787859020	1.0705957382894	NA
##	[2,]	NA	0.4009187786393	-0.9545345630583	0.8721605921915
##	[3,]	0.735323708392	NA	NA	NA
##	[4,]	0.496259260014	0.9986640305165	-0.3244405800796	0.5998308457337
##	[5,]	0.375407880255	0.2897995303304	-0.5812651456699	-1.0931198710247
##	[6,]	1.230585425302	NA	-0.8822476530089	1.8604797352009
##	[7,]	NA	NA	NA	0.4360302646979
##	[8,]	-0.983791051670	-0.1335664476419	-0.4611045701347	-0.8094571341215
##	[9,]	1.801448103460	NA	NA	-0.9782525902053
##	[10,]	NA	-0.5297129998002	NA	NA
##	[11,]	0.040776388756	-0.4702481497692	-0.5139468308215	-0.4799687270791
##	[12,]	1.191363261839	NA	-0.6935440876414	-0.2655147234089
##	[13,]	0.507758827139	NA	-1.0695414655630	NA
##	[14,]	0.144462903442	0.6166707213987	-0.2632552359725	1.1177952874147
##	[15,]	0.805982309760	-1.3347858310793	0.1997276190263	1.3216186842682
##	[16,]	0.318740754399	-1.3939991613279	0.5641402187347	0.6804332575742
##	[17,]	1.227853681000	-0.2326846853308	-0.6551088624500	-0.0050669785132
##	[18,]	0.916019338439	-1.6629070020699	-0.1554785415367	0.1422929601216
##	[19,]	-2.051795290754	-0.1597456777398	-0.4340084515221	0.3174614015675
##	[20,]	-0.307602259571	NA	NA	0.6722818079787
##	[21,]	NA	0.3893778605189	-0.7411251930071	0.4304394452084
##	[22,]	-0.610312636900	-0.5295902257687	NA	0.6371478752893
##	[23,]	-0.359857019292	NA	-1.2543414175989	NA
##	[24,]	0.209562052597	-0.3740487523569	0.0025487091592	NA
##	[25,]	0.622808468443	-0.4249303010764	-1.7164256597347	0.2817805577368
##	[26,]	NA	-0.6723709445032	-0.7248533050588	NA
##	[27,]	1.725187597987	-1.1326354982571	-0.5148916598703	0.0281438129149
##	[28,]	0.122557542010	-0.4901837985375	0.5008732938913	0.2928456919075
##	[29,]	2.116210836416	NA	0.5735503968456	NA
##	[30,]	0.680629589247	-1.2781377471347	1.5022995004010	NA
##	[31,]	0.342712531722	1.4150051654832	NA	0.5665219658542
##	[32,]	0.079219262928	0.1289901045419	0.4147227973419	NA
##	[33,]	0.405988200478	0.8485364200133	NA	-0.8773735332673
##	[34,]	-0.322814390459	1.1146931198752	NA	NA
##	[35,]	NA	-0.3179778497092	0.7492102728312	-0.7265123633436
##	[36,]	-0.539683284147	0.5361277901390	0.8398757896822	0.6611388984390
##	[37,]	-0.291400977814	-1.1131065366772	NA	0.3191174344123
##	[38,]	-0.949188826397	-1.6935976457476	NA	0.0582041948219
##	[39,]	0.612292415813	NA	NA	NA
##	[40,]	NA	NA	0.0662463624768	2.2619578098803
##	[41,]	-0.166824828989	0.4098418540092	NA	-0.7434579239827
##	[42,]	NA	NA	0.6052880623004	NA
##	[43,]	NA	0.2128172705296	-0.8626599326395	NA
##	[44,]	-0.600417386043	NA	-0.7525663284526	-0.7069421023541
##	[45,]	0.401845153225	0.0697029231010	-0.0132902350168	-0.6477605275882

##	[46,]	-0.499507693281	-1.7241386400773	-0.7907162129108	0.1710115026862
##	[47,]	-0.521664281580	NA	1.7299310283669	-1.0833868429083
##	[48,]	NA	NA	NA	0.3455599711248
##	[49,]	NA	-0.7229684283219	-0.8780563449933	-0.8215444072620
##	[50,]	-0.389580666143	-0.8646789455394	-0.0519266123196	-2.1552975242643
##	[51,]	-0.032187426111	-2.2681595575201	1.3466114182944	0.3530638756240
##	[52,]	NA	NA	0.3023270938186	1.1460034423493
##	[53,]	1.306904069557	NA	0.9534547878152	3.0397911165885
##	[54,]	-0.842290637912	1.0377012562976	0.4426851517638	-0.1431629875974
##	[55,]	NA	NA	-0.4190810232176	1.2074177948621
##	[56,]	-1.513276275884	-0.0645485245604	-1.0490202562378	0.4860635305130
##	[57,]	-0.079793561426	-0.0390457713293	NA	NA
##	[58,]	-1.181392863774	0.4595227820726	2.0957373100146	-0.1391415358547
##	[59,]	-0.574188798725	0.6606908860729	-2.0768290082308	1.3691022610295
##	[60,]	1.187202730706	NA	NA	0.3000308057306
##	[61,]	NA	NA	-2.2584638705751	NA
##	[62,]	1.121829706657	NA	NA	NA
##	[63,]	0.979132525092	NA	0.3352659340102	-1.0799012421275
##	[64,]	1.312989451330	-0.9991752363532	-0.7774597146439	0.7255231086287
##	[65,]	-0.118895516691	NA	-0.5779116936801	-0.4719065371433
##	[66,]	0.453495954615	NA	2.2264255595822	-0.7950675677139
##	[67,]	0.946970676981	-0.8536534747038	NA	-0.5075581739247
##	[68,]	0.188531096648	-0.3862254841998	0.1725726895997	0.0281627214211
##	[69,]	0.921813899007	-0.3710785224098	-1.2323370079648	-0.3444704342287
##	[70,]	1.000530356524	NA	NA	1.2089712916808
##	[71,]	-0.265191367707	-0.8411649250820	0.8003773343611	-0.3213006116083
##	[72,]	0.188061093264	0.4504613360270	NA	-0.6911990678499
##	[73,]	-0.654288406643	-0.8770994868134	-0.7029370214072	NA
##	[74,]	0.564069412565	-0.5418948514253	NA	0.6291899092414
##	[75,]	-0.220811040071	-1.1731886078875	1.6001835741993	0.0293475448421
##	[76,]	-0.091518885498	NA	-0.3627060431417	NA
##	[77,]	-0.060407248511	-0.9595214885405	-0.4364420790381	0.6046626138493
##	[78,]	NA	1.2830485034470	NA	-0.1180967294953
##	[79,]	NA	-0.0499556330888	-0.4263327027764	-0.3614439512362
##	[80,]	-2.427603776743	-1.0497533917278	NA	0.6938833775441
##	[81,]	-0.315509117101	-1.2307530520366	-0.1401135039030	NA
##	[82,]	0.142427880432	-0.6008272728399	NA	NA
##	[83,]	-1.775728363369	0.5257756897187	NA	1.4186297993661
##	[84,]	-0.955357243028	NA	NA	-1.2003837478852
##	[85,]	1.730016846898	-0.0040883503227	NA	-0.2500606851157
##	[86,]	-0.341912208876	-1.9731688677565	-0.5558183830919	NA
##	[87,]	-0.171319939019	NA	NA	-0.7484897455322
##	[88,]	-2.229377082175	0.7184410811786	1.1676463734721	-0.1180798584574
##	[89,]	2.663870260562	-2.3807772235574	-1.3332836370825	0.8046357246404
##	[90,]	1.090570676124	-0.6962670115468	-0.4352641729870	1.7807865723008
##	[91,]	NA	-0.3472564509203	0.8401192995185	-1.6175584026797
##	[92,]	NA	0.5074485508002	0.9737023854575	0.6203325290745
##	[93,]	NA	-0.7326949105882	-1.0983808620406	1.2372215490280
##	[94,]	0.455969371282	-0.0912485471141	-1.1300334663324	NA
##	[95,]	1.722919594199	NA	NA	-0.1812209030056



##	[96,]	1.756286140781	0.5734308428444	NA	-1.4921246126947
##	[97,]	1.283034007136	NA	-0.3809227783445	0.3219685653273
##	[98,]	0.590330511285	1.7489788997291	NA	0.9705918687753
##	[99,]	NA	NA	1.3579008084169	-2.7202472582992
##	[100,]	1.642887157493	NA	NA	-2.4823475249450
##		[,81]	[,82]	[,83]	[,84]
##	[1,]	1.262503294113	2.320451126266	NA	0.3834711171725
##	[2,]	1.179320470561	NA	-0.5189815598510	NA
##	[3,]	NA	NA	0.4257739984978	NA
##	[4,]	NA	-0.930969620061	NA	0.5179876117248
##	[5,]	NA	0.801180838187	-0.0449457111870	-0.3943813688486
##	[6,]	-0.050356009516	NA	1.2545107012820	0.2380861917777
##	[7,]	-0.111224428758	-0.285676769240	NA	-0.9595224808904
##	[8,]	-0.352368396371	-0.165612247937	0.9158182854689	1.1612724921486
##	[9,]	-0.400321688844	0.038854015842	0.4100982724578	2.0785811012630
##	[10,]	1.574894294006	-0.669643228915	-0.0222534862041	-0.5486307272159
##	[11,]	0.161087676103	1.693058961875	0.0086674085467	NA
##	[12,]	NA	NA	NA	NA
##	[13,]	-1.032373440239	NA	NA	1.4931836258243
##	[14,]	-0.062764584233	0.094533643086	NA	NA
##	[15,]	NA	1.294509894037	1.2873179779699	-0.3799035277142
##	[16,]	1.009301904797	-0.480380361137	-0.2581563227444	0.8516312313731
##	[17,]	-0.957133388328	0.748051330824	0.8122562064667	-0.7852595043220
##	[18,]	0.201618644485	0.424695699179	NA	NA
##	[19,]	NA	NA	-0.1056979280971	-0.4731395010447
##	[20,]	NA	0.883388934519	1.1549484564320	-0.3313973118627
##	[21,]	-0.965029412117	NA	NA	NA
##	[22,]	-1.731561214884	NA	NA	NA
##	[23,]	NA	-1.263254072681	NA	-0.2045834372995
##	[24,]	-0.456388438622	-0.257310227435	0.0642277349830	0.6240367966707
##	[25,]	0.478666412344	NA	1.0091799872491	NA
##	[26,]	NA	-0.045996830933	-0.6261153722876	NA
##	[27,]	-0.414235650354	-0.399541973442	-1.4699118091958	NA
##	[28,]	NA	NA	0.4534942404770	-0.9691311974108
##	[29,]	0.777925776064	-0.015113076748	-1.8874443216552	NA
##	[30,]	NA	0.087482235561	-0.7533560482352	NA
##	[31,]	0.061327922831	NA	-1.2056425977485	-1.6164474142203
##	[32,]	NA	NA	NA	NA
##	[33,]	0.141295485318	-1.586797603559	0.3161125154795	0.2475888357945
##	[34,]	NA	1.016832412578	0.2036945433048	0.0195381062934
##	[35,]	1.078347153023	NA	-1.6352934960604	NA
##	[36,]	NA	NA	0.8298039898829	0.2492040659822
##	[37,]	0.316311044549	NA	0.1995596189199	-0.4348195424700
##	[38,]	-0.140860772117	NA	NA	-0.4247068152718
##	[39,]	NA	0.501543249545	0.4570285858089	1.0852414628826
##	[40,]	-0.436154590429	-2.747188597706	NA	-1.0956418241525
##	[41,]	1.453127689515	0.889084194346	NA	0.9715319896751
##	[42,]	-1.488684895372	-0.260138540262	NA	0.0187764742239
##	[43,]	1.388037157630	0.828726792894	-0.7733622795231	-0.4917854472217
##	[44,]	NA	0.495122298307	-1.1457345102057	NA

##	[45,]	NA	NA	NA	NA
##	[46,]	NA	0.180371988477	-0.3465892116980	NA
##	[47,]	0.503350139248	NA	-0.3145888932237	0.4217028138500
##	[48,]	0.864116319927	0.306544031115	-0.9065948732343	0.0045881248317
##	[49,]	-0.569987346032	0.117334971645	1.5552008464468	1.0886963851353
##	[50,]	-0.404988975895	-0.873896318865	-0.2517095413787	-0.4676960623729
##	[51,]	NA	1.951813884764	-0.9952674692248	0.1747955660742
##	[52,]	-0.882815962160	-0.223435080046	NA	-0.0948248259259
##	[53,]	-2.085899269532	1.185130934824	NA	NA
##	[54,]	NA	1.158810552221	2.3938480555947	NA
##	[55,]	-0.300731956748	NA	-1.2579395628297	-0.5999095358407
##	[56,]	0.160491161824	NA	-0.4573163079944	0.0372068574086
##	[57,]	NA	NA	1.9910713572130	-0.0537100741027
##	[58,]	NA	NA	0.2471954357561	NA
##	[59,]	1.779192338289	-1.776579922717	NA	NA
##	[60,]	0.807768613296	NA	0.8527357385614	-1.5977292120034
##	[61,]	0.057683887913	-0.442448265657	-0.8295887405762	1.0125637512271
##	[62,]	-0.538431700211	-1.316358985094	NA	0.6894393186030
##	[63,]	0.411176672138	0.526832702987	NA	NA
##	[64,]	-1.152260909371	0.833223987903	NA	0.0691343861762
##	[65,]	-0.359430363449	1.515185921174	NA	-1.1956196901006
##	[66,]	0.100165560188	0.489963075848	-0.9418520625699	NA
##	[67,]	NA	-1.025712164517	0.2043791446975	0.1505327875781
##	[68,]	0.714552030937	-2.302216096787	-1.2021510930527	0.0245044114842
##	[69,]	0.775182411319	1.097653098081	-0.7385155269605	0.4466823462345
##	[70,]	NA	-1.549200291287	0.5055336844615	0.1648985812024
##	[71,]	NA	0.157157947430	-0.2780291062902	0.7530864777663
##	[72,]	1.887627791796	0.100832170670	-0.9592094539856	-0.2313017189726
##	[73,]	NA	NA	-0.8123706191026	NA
##	[74,]	NA	1.221766541571	-1.0140449592226	1.5345653453908
##	[75,]	NA	NA	NA	0.3162875625760
##	[76,]	-2.101738208405	NA	NA	2.5102326067987
##	[77,]	1.364163614489	2.936096889397	NA	NA
##	[78,]	-0.324424846337	NA	1.0852414409373	-0.3797689425349
##	[79,]	-1.040129834811	-0.510535075663	NA	NA
##	[80,]	NA	NA	0.8425438191527	1.4358880653655
##	[81,]	0.567965775793	0.417111872847	0.0367466561505	-0.1322193764765
##	[82,]	NA	0.892693756055	-0.2703206590280	-0.1586044883651
##	[83,]	1.403213282171	NA	-0.2611105686218	-0.5564139532334
##	[84,]	-2.070054611777	1.120676630580	-2.8712869322973	-1.2838266671835
##	[85,]	NA	-0.691234889370	-0.2606806677668	-0.3569541889349
##	[86,]	-1.277192782290	NA	NA	0.4226593817918
##	[87,]	NA	-0.342462741400	0.4373038430363	-0.3590133659564
##	[88,]	1.178058536659	0.184973695870	NA	0.3484351868150
##	[89,]	0.552954893803	0.539009604360	0.4556186159937	NA
##	[90,]	1.230912399760	NA	-0.9688699269243	-0.7431514481850
##	[91,]	-1.064109202540	0.635129890861	0.4729377883658	NA
##	[92,]	-1.116048465645	-0.076861795588	-0.6875139410589	1.2322406954602
##	[93,]	-1.158124481449	NA	0.4231916260865	-0.0039011115474
##	[94,]	NA	2.174707529160	NA	-1.0888081440130

##	[95,]	0.814451546464	NA	1.0982614485677	-0.2404087426747
##	[96,]	0.258231725382	-1.249297501649	0.0298934554501	1.0468850238392
##	[97,]	-0.975995747073	-0.314479646852	0.0821956260340	-1.7602668733388
##	[98,]	-1.352468457505	1.110363670096	-0.2049586263501	-0.4512356438861
##	[99,]	NA	-0.188727781834	NA	NA
##	[100,]	NA	-1.594142311520	1.1498228157239	-0.9460320799210
##		[,85]	[,86]	[,87]	[,88]
##	[1,]	0.325489101278	NA	-0.0487362202127	0.6046379048181
##	[2,]	NA	NA	-0.7291673106602	NA
##	[3,]	0.815834940120	0.320672079978	NA	-0.7729850901983
##	[4,]	0.795725803599	-0.656677059709	NA	-2.5388907616624
##	[5,]	0.323858252367	NA	NA	0.3124549804328
##	[6,]	1.501734548177	NA	NA	1.7101504317747
##	[7,]	2.860515122708	-0.188765628619	NA	3.2981486782842
##	[8,]	NA	0.225518149783	-0.2398940725994	-0.0908716271342
##	[9,]	1.293239926173	0.533102214461	NA	NA
##	[10,]	0.219291071184	-1.615377156390	NA	0.6185662452322
##	[11,]	0.516257036343	-0.614488230182	-0.2704796248091	NA
##	[12,]	0.393712806074	NA	-0.6614634121338	0.5706904278511
##	[13,]	-2.679434673310	-1.223877677671	NA	NA
##	[14,]	0.887582138978	-0.072146323809	-0.2287229914628	0.6244281745227
##	[15,]	1.183557232396	0.149097526078	-0.7769597076442	NA
##	[16,]	-0.035526569115	NA	0.7592329680107	1.7381177680230
##	[17,]	NA	0.878115760638	-0.0955317943636	NA
##	[18,]	0.577437499359	NA	NA	0.0172903155748
##	[19,]	0.265967864664	0.582868136349	NA	-1.9700065092007
##	[20,]	-1.091022291912	-1.284023376014	NA	-0.8531193228280
##	[21,]	-0.492805243018	0.983007281205	1.4559051203523	-0.8344412161858
##	[22,]	-0.017345333412	0.997906266818	-0.1983514783662	0.0445191927502
##	[23,]	-1.110534536490	-0.839915387849	NA	0.1836712430228
##	[24,]	2.702641284467	NA	NA	NA
##	[25,]	0.975493116560	-0.425587129664	-1.5308624920344	-0.6143366432473
##	[26,]	NA	-1.207688792215	NA	0.6735441489640
##	[27,]	-1.121770412124	NA	0.9058710356946	0.2362908993704
##	[28,]	1.047151212433	0.703187744749	1.2791035669683	-0.2555811521759
##	[29,]	NA	NA	NA	0.4598333036992
##	[30,]	NA	-1.041878535253	NA	0.5082176639723
##	[31,]	1.721571068897	NA	NA	NA
##	[32,]	NA	-0.025425986639	NA	-1.2038011464016
##	[33,]	1.286384592280	-0.029132400695	-0.9486180564652	NA
##	[34,]	0.607566376472	NA	NA	2.4925923742615
##	[35,]	NA	-0.377357908566	-0.4407754685599	-1.0295500525490
##	[36,]	NA	-0.580847242936	-0.6429345732706	-0.1217743503726
##	[37,]	NA	NA	NA	NA
##	[38,]	NA	-0.800296064685	NA	-1.1873246958782
##	[39,]	NA	0.989476012066	-0.5968075688076	0.2509181885002
##	[40,]	1.736533659079	-0.082977367579	1.4400094696718	0.6088639603601
##	[41,]	2.426272868518	-0.285106433117	NA	2.2312937397015
##	[42,]	-0.674103164015	NA	0.3546242891586	-1.9231816394869
##	[43,]	NA	0.987852291857	NA	1.8595758738301

##	[44,]	NA	-0.723501641317	-0.1590646848920	NA
##	[45,]	0.889731700756	-0.317231000647	NA	-0.3831709963145
##	[46,]	1.100024571294	NA	-2.5265244607789	NA
##	[47,]	0.803345487174	-0.069906459952	-1.2535162738689	-0.5656657435153
##	[48,]	-1.285018733824	NA	1.8440482774200	0.3084030267734
##	[49,]	NA	-0.225641477072	-0.2808990490354	NA
##	[50,]	1.201993185498	1.523068155665	NA	NA
##	[51,]	0.716566117961	0.165291113517	-0.0090806290795	NA
##	[52,]	NA	-0.286888614658	-0.4510048428695	1.7103587786052
##	[53,]	NA	NA	NA	NA
##	[54,]	NA	1.139758471772	NA	NA
##	[55,]	-1.225475925445	-1.936488004802	NA	NA
##	[56,]	NA	NA	NA	0.2478480641127
##	[57,]	0.538097347939	-1.623632466061	NA	-1.0313709129784
##	[58,]	0.094931306424	-0.722480184142	1.8643516035403	-0.3208722151920
##	[59,]	-0.587056269132	-0.108128995920	0.1323759545664	NA
##	[60,]	NA	-0.804059988246	0.2617076137951	-0.3379298533113
##	[61,]	-0.142364374470	-0.152528322887	NA	0.3467925943854
##	[62,]	NA	-0.471558423107	-0.3204739063092	NA
##	[63,]	-2.961023082496	-0.103298685650	NA	NA
##	[64,]	NA	0.381195993630	NA	-0.4511707959748
##	[65,]	NA	0.384891272316	NA	0.7236695541900
##	[66,]	1.257725985037	NA	NA	3.4538798289891
##	[67,]	-0.437711010311	NA	NA	NA
##	[68,]	-0.537236704744	NA	-0.7119667234402	-1.4154144792211
##	[69,]	0.218310746854	1.301676530385	1.1820909796383	NA
##	[70,]	0.093214026593	0.327334183524	NA	-0.7335251835072
##	[71,]	0.868903249366	-0.930893116538	1.0686886164984	-0.6095774167778
##	[72,]	-0.918790800052	0.638725883696	-0.1394885218950	0.1085722910061
##	[73,]	NA	-0.320304193736	1.3367643286895	0.5993740169131
##	[74,]	NA	0.201705244331	1.9051047844209	NA
##	[75,]	NA	0.769005893034	NA	NA
##	[76,]	1.180396571029	NA	-1.9015574040836	NA
##	[77,]	NA	NA	0.2055197293211	0.1547479576536
##	[78,]	NA	-0.421329541663	-1.5766682545602	-0.4247616385269
##	[79,]	NA	0.701357629163	-0.8541678541561	0.8781779480803
##	[80,]	NA	0.221731729514	1.1390264179521	1.3464063916517
##	[81,]	0.282913465707	-0.997569429118	0.5085177108497	0.8563490337983
##	[82,]	NA	NA	NA	0.8075651912432
##	[83,]	-1.508786364555	NA	-0.7087678615953	0.6276118983209
##	[84,]	-0.384553506348	-0.314615337024	0.3837446394464	NA
##	[85,]	1.169315723372	1.809889614215	-1.1161348944514	-0.0059293997502
##	[86,]	-1.624253810115	-1.873477056460	0.7103234624386	NA
##	[87,]	-1.208222700535	-0.584782678192	-1.0514965589324	1.4196654669912
##	[88,]	NA	0.107064194136	NA	0.8111528368194
##	[89,]	-0.207003533530	1.567797669328	1.1314017496742	0.9665547959073
##	[90,]	-0.326518972701	NA	1.2723724454005	NA
##	[91,]	NA	-0.980401774569	0.2908380496479	NA
##	[92,]	NA	0.148664396936	-0.4866711911239	-1.2502125485957
##	[93,]	-0.580922521790	NA	NA	NA

##	[94,]	NA	1.729137151744	1.7772007742506	-0.5056735578399
##	[95,]	NA	-0.199329633060	-0.8851146317146	NA
##	[96,]	0.902298138825	2.207156894763	NA	-0.2758352482698
##	[97,]	0.628011455290	-0.079641593953	0.9644142711448	0.5002432961766
##	[98,]	-1.244037649085	-1.171153479416	NA	0.0810052191157
##	[99,]	-0.373482410627	NA	NA	-0.1091036392875
##	[100,]	-0.020419240404	NA	0.7516295088721	NA
##		[,89]	[,90]	[,91]	[,92]
##	[1,]	-0.5491828380159	-1.510583211149	-1.772612481396	NA
##	[2,]	NA	-0.257968442464	-0.550461791448	NA
##	[3,]	-0.3467226415620	NA	NA	NA
##	[4,]	-0.5068350504814	0.010473513198	NA	NA
##	[5,]	-3.1052764969049	0.428193648437	-0.377097304271	1.2440284847393
##	[6,]	-1.1327347680855	-0.790095133757	2.086190885902	-0.6236337195977
##	[7,]	0.9140259266569	0.923287508716	-0.186460515405	0.8718209102926
##	[8,]	NA	-0.210403299509	NA	0.0312497915656
##	[9,]	-1.2216752111648	NA	0.042653159484	-1.8153820990163
##	[10,]	-0.3654218467269	0.555433764886	-0.926981090863	NA
##	[11,]	-1.5631580087481	0.755896347961	NA	1.8278187261222
##	[12,]	-1.4797264598067	1.653351080015	0.562904330462	-0.4060723107520
##	[13,]	-0.6428793597446	-0.659660157375	0.288194830200	-0.4046553071069
##	[14,]	NA	-0.166727496675	-0.646212652975	1.7963040064971
##	[15,]	1.1286071451545	NA	0.942504206920	NA
##	[16,]	NA	-0.543057058765	NA	-0.9636815631609
##	[17,]	NA	NA	1.143317568071	NA
##	[18,]	0.3825881468919	0.089916557792	-0.257421850143	NA
##	[19,]	NA	-1.466839381093	NA	-0.6503009213588
##	[20,]	-0.0286556335419	2.178053050995	0.703762811853	0.8539548315771
##	[21,]	NA	-1.021517854916	-0.542253385739	-2.4815806335733
##	[22,]	0.7261991872513	-0.177554420000	-1.218146266296	0.1994884875757
##	[23,]	0.2820087501752	NA	1.684119938644	-0.4945599415555
##	[24,]	0.0344354319213	-0.376999118167	1.084618034987	1.2778515772429
##	[25,]	0.4237873110246	0.657554625918	-0.678803832142	-0.8966111137835
##	[26,]	-0.1816147934182	0.618287479260	NA	1.3359688737426
##	[27,]	-0.0890696712871	1.225333596121	0.300781001889	NA
##	[28,]	-0.5016389114395	-1.039503405541	NA	NA
##	[29,]	NA	0.253429658925	0.536280988744	0.5333513845329
##	[30,]	NA	NA	-0.543333834525	0.2149788866315
##	[31,]	1.2632846315336	-0.184210567877	NA	NA
##	[32,]	1.4196005088397	1.483439942031	-0.465165777591	NA
##	[33,]	-0.3414356921440	NA	-0.345161833733	1.2668057341155
##	[34,]	-0.6803620479161	NA	-0.576496860261	NA
##	[35,]	-0.0423086841870	-0.042399888469	0.303692093326	NA
##	[36,]	-0.7893337890318	NA	0.344448672227	NA
##	[37,]	0.6000215349678	-1.842182219571	-0.126381299049	NA
##	[38,]	-0.1764197767928	-0.050211711195	NA	-0.9469116443754
##	[39,]	1.7522076978084	1.270488225419	-0.218215789234	-0.3714085336187
##	[40,]	-0.3317053442826	0.872718374465	-0.829835784323	NA
##	[41,]	NA	-0.114233578975	-0.906150220569	NA
##	[42,]	NA	NA	1.563941782713	-0.0051922284112

##	[43,]	-0.1111071224370	-0.650704730476	NA	NA
##	[44,]	-0.6063669094758	NA	-0.361038746075	0.2049689177374
##	[45,]	NA	NA	-0.033747651512	-0.8770290846597
##	[46,]	-1.2295648755169	-0.027809434386	0.631511002370	-0.2785155555102
##	[47,]	-0.8938736310637	-0.222083924608	0.817190614947	-1.2747857893845
##	[48,]	-1.7825676955483	-0.396234461252	-0.376395786389	-0.9962954222830
##	[49,]	0.0015667263356	-0.512192231917	0.499560132760	0.0088666282032
##	[50,]	NA	-1.095342405668	1.681527352464	-0.0031557916266
##	[51,]	0.2329866573264	NA	0.361587631721	-0.5174550480495
##	[52,]	1.8332131815157	-1.641057950975	-1.233370089720	NA
##	[53,]	-1.2146647369185	1.799687520449	-1.072027190496	0.4657889090372
##	[54,]	NA	NA	-1.308532001701	NA
##	[55,]	1.0949303572324	NA	-0.027064381508	-0.9881369891996
##	[56,]	NA	0.945776980808	0.578564730422	-0.9443549945205
##	[57,]	1.7565090360035	NA	NA	-1.3033258725028
##	[58,]	NA	-1.694362178522	0.101730189694	1.2217127729401
##	[59,]	NA	1.097876259464	-0.050140070768	0.3629731628852
##	[60,]	0.3035523282265	-0.667071521484	NA	-0.0799169635984
##	[61,]	1.3637288441119	0.727144550619	NA	0.1734489568039
##	[62,]	NA	NA	-0.043174416128	NA
##	[63,]	NA	-0.903935558603	1.964613121077	NA
##	[64,]	0.1041317399384	NA	0.554733546513	0.1234939750054
##	[65,]	NA	-0.932133079394	NA	-0.1189882117758
##	[66,]	-0.0629152762697	1.323533016657	-0.527548373913	0.9264657677209
##	[67,]	-0.7680677175295	NA	0.151095652528	NA
##	[68,]	0.6922352197818	-2.331398753024	0.635169856409	0.4392090719923
##	[69,]	-1.1350347255228	-1.882034008163	NA	0.6083642195343
##	[70,]	NA	0.996290924367	NA	-1.2308653329165
##	[71,]	0.9231658070971	1.575207614308	NA	NA
##	[72,]	NA	NA	2.220826786759	-0.0508433070745
##	[73,]	-0.4137821397166	-1.334376598102	0.457067206450	NA
##	[74,]	NA	-0.418640134344	NA	NA
##	[75,]	-0.3451849915290	0.758528902962	-2.638999881953	-1.0585005048418
##	[76,]	NA	NA	-0.631218497314	-0.6542827360010
##	[77,]	0.5288014326345	0.816629554499	-1.045493711635	0.6815700616641
##	[78,]	0.0441037136408	-1.292405823686	0.075907828953	NA
##	[79,]	-0.3767664645753	NA	0.125215109049	-0.3897199625206
##	[80,]	-0.8557138569701	NA	1.670719425429	NA
##	[81,]	NA	1.211299944251	0.693635650521	-0.3640391522730
##	[82,]	NA	NA	NA	-1.6807535961823
##	[83,]	-2.4843147074625	NA	NA	0.7630348970256
##	[84,]	-0.7109830769084	-0.179171320793	NA	0.3742516854179
##	[85,]	-0.2372340131140	NA	1.171190590539	1.8938423297557
##	[86,]	-0.2234415351281	1.707306948133	-0.132207743199	-0.1809836740891
##	[87,]	1.1895256362859	NA	NA	1.8521842869199
##	[88,]	NA	0.573077503811	-2.161064217537	2.6897235921730
##	[89,]	0.5895662487270	NA	0.317076495390	NA
##	[90,]	NA	-0.430320612981	-2.137345571868	-0.5176291966469
##	[91,]	NA	-0.150453410309	-0.518094461135	0.2234106916735
##	[92,]	-1.4818095984492	1.541826314738	-0.383749026651	-1.5034923945392

##	[93,]	0.5539248914067	NA	2.005312088221	0.5616223821558
##	[94,]	0.0380445960869	1.118672471800	-0.822092578268	-0.9845295380256
##	[95,]	-1.0624081986962	0.562539452201	NA	0.1343271337808
##	[96,]	-0.4669195253483	NA	0.985669876656	0.4048027243341
##	[97,]	0.2226772145000	1.925834103228	0.880072589149	-0.3602079723872
##	[98,]	1.8624920925955	0.672196020623	NA	NA
##	[99,]	-0.7277855120516	-0.996996844447	NA	-1.7427240733678
##	[100,]	-0.9904598423380	-0.498535122033	1.061427880676	0.0061243456577
##		[,93]	[,94]	[,95]	[,96]
##	[1,]	0.6517763603366	-0.968021122080	-0.1301541848401	NA
##	[2,]	-0.0039520234553	1.746757457664	0.0897532580525	NA
##	[3,]	0.5242806182108	NA	1.0149041644399	NA
##	[4,]	0.2095827952796	-0.978670865701	NA	-0.802003213607
##	[5,]	NA	-0.179417971473	0.6832521386107	-0.624038376160
##	[6,]	NA	-0.732587751033	-0.2722307602722	0.567606351110
##	[7,]	NA	1.090458338074	NA	-1.104113161468
##	[8,]	-0.0075970949921	-0.923658939361	-1.2812814605225	0.732434028185
##	[9,]	NA	-0.715515034998	-0.8123486458866	-1.283051296041
##	[10,]	-0.3176432328485	-0.060938206653	0.9303690174321	-0.171568320629
##	[11,]	NA	0.837142040917	0.7999217626563	1.056978569277
##	[12,]	NA	-0.151330334642	NA	-0.620863715154
##	[13,]	0.9371331012111	-1.071222191804	-2.3820154985494	0.425555143322
##	[14,]	0.9938270233428	NA	NA	NA
##	[15,]	-0.4782256101459	NA	0.4189543027687	-0.872899733616
##	[16,]	-0.2635716976367	NA	NA	-1.252249168694
##	[17,]	-1.0550330921107	NA	-0.1032447375920	-0.423102561035
##	[18,]	-2.0324393170803	NA	-0.9915366202753	-0.086699021909
##	[19,]	NA	-0.624848500838	-0.4532040939726	NA
##	[20,]	1.6683054201580	0.157220837895	-0.6853532570489	-1.683290632219
##	[21,]	0.5093947898128	0.346117108225	NA	0.236682181735
##	[22,]	-1.5102909391291	0.466602975976	-0.6485210061600	-1.060489843695
##	[23,]	NA	NA	-0.2333218864574	0.215038249774
##	[24,]	NA	0.534938660197	-0.2759664360659	0.099889504491
##	[25,]	1.5087602753429	0.245991743549	1.2381431459822	0.383379352716
##	[26,]	-0.3044633461440	-0.131152181582	0.1243507083345	-0.782472188192
##	[27,]	NA	-0.597428268657	-0.9858390722251	NA
##	[28,]	-0.3518225777534	NA	-0.9655009567758	0.606623843424
##	[29,]	-0.0948348429499	-0.488328633293	NA	0.469715885284
##	[30,]	-0.6287307212243	0.382663119776	NA	0.843464341101
##	[31,]	0.2496185689384	-0.503245520424	1.5365679712141	NA
##	[32,]	-1.0908086374234	-0.515876507825	-0.0123313517654	NA
##	[33,]	-0.9646841732668	0.021310327243	NA	NA
##	[34,]	-0.3678131986820	NA	NA	-0.972092610982
##	[35,]	-1.6422317977305	NA	0.1161228968831	-0.488908226395
##	[36,]	NA	0.166864505711	-0.5399646350196	NA
##	[37,]	1.3097379729704	NA	NA	NA
##	[38,]	NA	-0.856479186191	NA	NA
##	[39,]	NA	-1.025233342894	NA	-1.046117130310
##	[40,]	NA	NA	0.0039557677199	0.584930318619
##	[41,]	-0.1824525994348	0.356002182885	NA	-0.898655554554

##	[42,]	1.6597841016741	0.255028844625	-1.1312301813664	0.428836621196
##	[43,]	-0.5346015660524	0.898484206915	NA	NA
##	[44,]	NA	0.290076929786	1.7269747736071	0.698282584052
##	[45,]	NA	0.157785812629	NA	NA
##	[46,]	-0.1039082002126	-0.247519712698	-1.0990263455839	NA
##	[47,]	2.1398871510029	-1.054896782934	NA	1.977555571297
##	[48,]	NA	0.877381567407	-0.1298114595986	NA
##	[49,]	-2.2715700067999	1.592636684596	0.6957387578853	0.692873278449
##	[50,]	-1.1566435070334	NA	0.0181125788688	-0.922720774801
##	[51,]	1.1313092342551	1.414258396705	NA	-0.793353695484
##	[52,]	-1.0657495172027	0.189600543064	NA	NA
##	[53,]	NA	-1.639501024231	2.3335465644576	-0.555438245727
##	[54,]	1.0972768997245	NA	-0.6633340715498	NA
##	[55,]	1.8645886344566	NA	NA	-0.563161757092
##	[56,]	-1.3634657993717	-1.566652385708	NA	-0.404222396618
##	[57,]	0.5474815443762	-0.678474846192	-0.5009637480898	-0.387820804933
##	[58,]	-1.0899701628729	-0.654291930150	0.3089831856590	NA
##	[59,]	-0.0763893785838	0.425398801415	0.1726900996594	-1.148320884852
##	[60,]	NA	NA	0.8210395415623	NA
##	[61,]	NA	0.309726485060	-0.0493705096992	NA
##	[62,]	-2.2542563612978	0.856828535869	-1.1029436290507	NA
##	[63,]	1.6873361197912	-1.102275266957	-0.6017586578603	-0.776990350166
##	[64,]	-1.5152413450725	-0.523330095612	NA	0.528073082765
##	[65,]	-0.2063783808615	0.833169939761	0.6755947695468	NA
##	[66,]	NA	-0.736204538979	1.0115707078225	-1.456381981736
##	[67,]	-0.3470624426300	NA	-1.3715936289603	NA
##	[68,]	NA	NA	0.6961180369382	-0.754785276987
##	[69,]	0.5172479210093	-0.839879911794	-1.8599990069458	NA
##	[70,]	-0.8041362187108	2.167530974713	0.8933667270865	0.135603285243
##	[71,]	0.6890292635538	1.205020479539	-0.6005308608032	NA
##	[72,]	0.0042061531910	NA	0.1660934797101	NA
##	[73,]	-1.3673533876839	0.391200172029	NA	NA
##	[74,]	-0.1824012251425	NA	1.1726992806905	NA
##	[75,]	-0.2939247806656	0.733405249258	1.9251884907708	0.267325627142
##	[76,]	-0.7200646827553	1.817146775977	-2.3398851746967	NA
##	[77,]	0.2446032494073	-0.301320616344	-1.4543213875361	NA
##	[78,]	-0.1695963677443	-0.468860369433	NA	0.931827307908
##	[79,]	NA	0.770337957805	2.9567950394032	0.561216420214
##	[80,]	1.6406233863499	NA	0.7742865203917	NA
##	[81,]	NA	1.905811963632	-0.7742783715426	NA
##	[82,]	NA	NA	0.2933810450842	0.465789064235
##	[83,]	0.8657051331624	0.894362293722	0.9876636390348	0.579326716924
##	[84,]	NA	1.424343976062	0.2471276828497	2.361966295775
##	[85,]	NA	0.700528380679	-2.2307372745240	0.234256657632
##	[86,]	1.1219528058666	1.467303044137	NA	-0.952563445373
##	[87,]	NA	1.138696468148	NA	-1.234935891229
##	[88,]	0.9678061187817	NA	-0.2013634313743	0.976000886453
##	[89,]	-0.6537461250693	-0.011213066007	-0.0727245559044	NA
##	[90,]	2.2642278135232	0.742865778503	-0.9699313223853	0.138002652276
##	[91,]	0.7401201988911	-2.393717814783	-0.7196289314019	0.234505670745



##	[92,]	NA	0.502227114297	0.0072383640557	0.896516226597
##	[93,]	NA	NA	0.2910903310450	0.351129973954
##	[94,]	NA	NA	-0.1917229428971	0.249931520363
##	[95,]	-0.0880589388050	NA	-0.4736905789201	NA
##	[96,]	NA	-0.159026229851	NA	NA
##	[97,]	-0.0974420035682	NA	NA	-1.023077813552
##	[98,]	-0.4543985375919	-0.901440549977	-1.2894576286702	-1.491170359718
##	[99,]	0.5148221178405	-0.589622123969	-0.4428883243668	NA
##	[100,]	NA	-0.205993698744	0.5213056405809	-0.551583796535
##		[,97]	[,98]	[,99]	[,100]
##	[1,]	NA	-0.2609255891646	0.786726950812	-0.674298755548
##	[2,]	0.088691259380	0.0243391723282	0.840573874137	0.801215890670
##	[3,]	NA	-0.2077176505258	0.458228475324	-0.623233943967
##	[4,]	-0.033742421949	-0.2363567201519	1.237170247025	NA
##	[5,]	NA	0.1194511301457	0.871922639541	0.397511511585
##	[6,]	-1.764430718360	1.1579543832492	-0.289471716625	NA
##	[7,]	1.193934041372	NA	NA	-0.882961099800
##	[8,]	NA	-2.1912138454449	-1.763908976207	NA
##	[9,]	0.617384359879	0.6290153293985	-0.200058150502	0.691076548583
##	[10,]	NA	-1.4431116954979	-0.472139225945	-0.202217681535
##	[11,]	NA	NA	-0.222383389596	-0.287735916854
##	[12,]	-1.008599443359	0.8109190759070	-0.499919439700	0.672514795410
##	[13,]	2.183196974582	0.7080483214464	NA	0.419387535071
##	[14,]	NA	0.0159931673335	NA	1.588096988153
##	[15,]	0.412217969426	-0.2441862145288	-0.019932047023	NA
##	[16,]	1.334222977405	0.3951713652606	1.481613589164	0.695550665844
##	[17,]	NA	0.8459851918315	-0.785569383678	-0.990494543778
##	[18,]	0.644794298577	0.7253290925191	0.800230148530	0.043561558686
##	[19,]	-1.210257243545	NA	1.274353990569	NA
##	[20,]	1.340956884417	-0.2039023379378	0.244451301882	0.385746158669
##	[21,]	-0.169905107953	NA	1.225948028708	NA
##	[22,]	-0.305828443810	-0.3564619339399	0.095944723929	-0.894369710805
##	[23,]	NA	0.1103084969521	-0.705219904311	-0.086029731775
##	[24,]	1.297906477509	1.4046651734373	1.469071688423	-0.604898709264
##	[25,]	-2.713069895258	2.3454982936981	NA	NA
##	[26,]	-0.590670429703	1.5961800053717	-1.057195622501	-0.282066201151
##	[27,]	1.337057995468	0.0286431682866	-1.220907615796	NA
##	[28,]	0.585471752547	NA	NA	1.773180823212
##	[29,]	-0.679160469439	0.4232952169013	NA	0.612189299836
##	[30,]	NA	NA	NA	1.881706803019
##	[31,]	-0.543752658848	2.3439422917231	-1.099569883444	0.857523000561
##	[32,]	1.175834191040	2.0309416254919	-0.209285634377	1.576070870424
##	[33,]	0.855000733901	1.7095930993152	0.255234489964	-0.224544208279
##	[34,]	1.047843591128	1.4492133885234	0.704247042387	NA
##	[35,]	NA	NA	NA	NA
##	[36,]	-0.930710730566	-1.6946021694757	-0.288037147623	1.449434779165
##	[37,]	NA	NA	-1.073554505490	NA
##	[38,]	NA	-0.7923823149343	-0.087312451830	NA
##	[39,]	-1.891072190689	-1.2416169199015	2.320027305044	1.423045638816
##	[40,]	-1.338806686103	0.5038074266031	-0.746061186758	1.631389949182

##	[41,]	-1.141550355472	-0.1718415195653	NA	NA
##	[42,]	0.040353782403	1.1689819529254	-0.415195356683	NA
##	[43,]	-0.385392808126	-0.2404245393247	0.540981110738	-0.466138862227
##	[44,]	-1.375666765912	NA	-0.906623450090	NA
##	[45,]	-2.158556603778	NA	-0.748203005978	0.355199399329
##	[46,]	-0.859092644305	NA	0.793808185152	0.272402144525
##	[47,]	1.429741745030	1.1934453055087	0.211347370154	-1.477516824666
##	[48,]	1.333884683798	-0.7390978267017	1.245369249458	-0.084876809431
##	[49,]	1.854420768165	1.2645925733057	-2.407689386072	-0.790493557873
##	[50,]	0.484920102455	0.2582699464624	-1.589370266609	NA
##	[51,]	-0.537685237705	-0.0321842547887	NA	NA
##	[52,]	NA	0.6009137293628	-0.258236791370	1.400053535983
##	[53,]	0.596646563752	NA	0.881560903663	NA
##	[54,]	NA	-0.8529676619207	-0.675428873245	NA
##	[55,]	NA	NA	-0.760405404960	1.404594395423
##	[56,]	0.055974120324	-0.5235905451685	-1.820499220078	-0.686885626203
##	[57,]	0.691073861666	1.1715576250549	-0.256080110800	NA
##	[58,]	0.281981048381	NA	NA	NA
##	[59,]	1.561923878583	1.9002055537199	-0.950059115761	0.144884798060
##	[60,]	NA	NA	-0.477229547745	0.849628483503
##	[61,]	0.538724275339	1.6995457872980	0.127388715523	0.305714086107
##	[62,]	0.393714864195	-1.0341929296161	NA	0.685322122316
##	[63,]	-0.789244090695	NA	-0.905495487463	NA
##	[64,]	-0.179137178770	-1.9720249906894	-0.381908665389	-0.960470116606
##	[65,]	NA	NA	0.072606779196	-1.407766943831
##	[66,]	-1.872968856337	NA	-0.597397635052	0.341195487914
##	[67,]	1.597481853321	NA	1.801386518921	-0.059825629139
##	[68,]	0.243151389903	0.5854948453862	1.317270164755	1.106436621246
##	[69,]	NA	-0.8679931191618	0.168990369906	-0.288935165523
##	[70,]	NA	0.8076862402990	1.156494432035	1.581847081381
##	[71,]	NA	-0.1453014289449	1.427358290527	2.619902465701
##	[72,]	NA	-0.0025564669919	NA	1.663757600458
##	[73,]	0.425435002959	NA	-1.621301934328	NA
##	[74,]	-1.206711230064	0.3421909219562	NA	NA
##	[75,]	0.149639570650	-0.3901562123585	NA	NA
##	[76,]	1.248604716293	0.3145082989016	-0.335287766652	-0.072541646011
##	[77,]	-0.620881417523	NA	1.115587940064	NA
##	[78,]	NA	0.7705665402183	NA	0.292229004311
##	[79,]	NA	-0.8271760051670	-0.435672831474	-0.194882911235
##	[80,]	NA	NA	0.672669198224	-1.209244038364
##	[81,]	NA	0.7607783992902	0.636263452281	0.227709375852
##	[82,]	0.503499886029	0.4189452103204	-0.103620859290	0.240887998053
##	[83,]	1.103674494835	-0.8545059626990	-0.915029960552	NA
##	[84,]	NA	0.1148075933321	-1.805923624601	-0.597237125687
##	[85,]	0.300224334133	-0.0178670972797	2.773517677869	NA
##	[86,]	NA	-1.2916390538539	NA	0.950728513287
##	[87,]	-0.564931357406	1.7344953655041	NA	NA
##	[88,]	1.365355173189	NA	-1.985514025155	1.599094958560
##	[89,]	0.557284557890	-0.0570303641668	1.278347317177	NA
##	[90,]	NA	-0.6385294191098	NA	-2.232970648922

```
## [91,] 1.443496387973 -0.7464836314728 -0.608392481366 -0.557050353154
## [92,] 0.461084236498 NA NA -1.367834633885
## [93,] -0.588723793713 NA 0.226198364271 NA
## [94,] 1.076740209498 -0.1904729011872 1.057523538226 0.460460263806
## [95,] 1.108149415165 0.7141004768522 -0.321394707032 NA
## [96,] -0.789019967423 -0.9106315881674 1.485457807135 NA
## [97,] -1.218706993728 0.7269622485490 0.612633365186 -1.119623824956
## [98,] 1.230058360973 NA 0.775260515941 0.985256783044
## [99,] -1.647194069301 -0.8546372935960 NA -0.619398870064
## [100,] -0.041680204327 0.8115369286337 0.152367661944 0.351009343829
```

- Sort the rows in matrix R by the largest row sum to lowest. Be careful about the NA's!

```
?sort
m=colSums(x,na.rm = TRUE)
a=m/n
a

## [1] -0.17258061986690 -0.05679516908464 -0.03140551439202
0.05392380533993
## [5] 0.05009370557717 -0.04296899236379 -0.14148693555983
0.02470471584670
## [9] 0.05659285375215 -0.04249015048052 0.06046957411362
0.04693910141283
## [13] 0.05975872422572 -0.12636646701467 0.06564360404148
0.11840651187185
## [17] 0.06294646799522 0.00925946853664 -0.06798039657244 -
0.07323922558226
## [21] -0.07806736691375 0.01169548899100 -0.10109210902323
0.04443790971658
## [25] -0.00084923027849 0.02867554035415 -0.22162236337776
0.02182779425053
## [29] -0.00349574366506 -0.10983030776985 -0.07114991926712
0.19802533992305
## [33] 0.07560572078638 -0.04447240904805 0.03680427431979
0.00602426219126
## [37] -0.06595126677289 0.31274813791668 -0.16974391474661
0.16157962272518
## [41] 0.01195376112291 -0.08559010695910 0.01522471980312 -
0.09437784732935
## [45] 0.17882147521471 -0.11978760189805 0.00483010171038 -
0.12482241659259
## [49] -0.03592108392664 0.05522131736063 -0.07385957459065
0.10284229715308
## [53] 0.04204331681032 -0.02586163070464 -0.09738934384118 -
0.00990467117712
## [57] -0.04681536187563 0.12118759351362 0.07871210055731 -
0.01664571071096
## [61] 0.03220025034778 -0.02369357667046 -0.01816886153445
0.07020756394896
## [65] 0.06998208112045 -0.00121651463520 -0.06455713379032
```

```

0.02619239789368
## [69] -0.01825256101018 0.05396199025543 -0.08742267057163 -
0.05612671191231
## [73] 0.05344015134233 -0.02347966348825 0.10032449122128
0.05138856651784
## [77] 0.19228255531946 -0.20804295299408 -0.07248646604086
0.05872217172724
## [81] -0.00859266404675 0.09385688956081 -0.03611190264930
0.02014410532900
## [85] 0.13614176767687 -0.04094155314132 0.03082964853247
0.13176105869296
## [89] -0.09995201182179 0.03617878406395 0.04558318696386 -
0.02586712973233
## [93] 0.00147470934725 0.05715051150629 -0.05391106236352 -
0.08257825017203
## [97] 0.07034602775868 0.14504097755169 0.02573646634637
0.14790973189043

sort(m,decreasing = TRUE)

## [1] 31.274813791668 19.802533992305 19.228255531946 17.882147521471
## [5] 16.157962272518 14.790973189043 14.504097755169 13.614176767687
## [9] 13.176105869296 12.118759351362 11.840651187185 10.284229715308
## [13] 10.032449122128 9.385688956081 7.871210055731 7.560572078638
## [17] 7.034602775868 7.020756394896 6.998208112045 6.564360404148
## [21] 6.294646799522 6.046957411362 5.975872422572 5.872217172724
## [25] 5.715051150629 5.659285375215 5.522131736063 5.396199025543
## [29] 5.392380533993 5.344015134233 5.138856651784 5.009370557717
## [33] 4.693910141283 4.558318696386 4.443790971658 4.204331681032
## [37] 3.680427431979 3.617878406395 3.220025034778 3.082964853247
## [41] 2.867554035415 2.619239789368 2.573646634637 2.470471584670
## [45] 2.182779425053 2.014410532900 1.522471980312 1.195376112291
## [49] 1.169548899100 0.925946853664 0.602426219126 0.483010171038
## [53] 0.147470934725 -0.084923027849 -0.121651463520 -0.349574366506
## [57] -0.859266404675 -0.990467117712 -1.664571071096 -1.816886153445
## [61] -1.825256101018 -2.347966348825 -2.369357667046 -2.586163070464
## [65] -2.586712973233 -3.140551439202 -3.592108392664 -3.611190264930
## [69] -4.094155314132 -4.249015048052 -4.296899236379 -4.447240904805
## [73] -4.681536187563 -5.391106236352 -5.612671191231 -5.679516908464
## [77] -6.455713379032 -6.595126677289 -6.798039657244 -7.114991926712
## [81] -7.248646604086 -7.323922558226 -7.385957459065 -7.806736691375
## [85] -8.257825017203 -8.559010695910 -8.742267057163 -9.437784732935
## [89] -9.738934384118 -9.995201182179 -10.109210902323 -10.983030776985
## [93] -11.978760189805 -12.482241659259 -12.636646701467 -14.148693555983
## [97] -16.974391474661 -17.258061986690 -20.804295299408 -22.162236337776

```

- We will now learn the `apply` function. This is a handy function that saves writing for loops which should be eschewed in R. Use the `apply` function to compute a vector whose entries are the standard deviation of each row. Use the `apply` function to

compute a vector whose entries are the standard deviation of each column. Be careful about the NA's! This should be one line.

```
?apply
q=apply(x,na.rm = TRUE,2,sd)
q

## [1] 0.84267554143 0.85317302218 0.93341528619 0.94108414701
## [6] 0.88661502776 0.92831403167 1.12266738222 0.99554960592
## [11] 0.85644155512 0.94355655611 1.23686169256 1.00240378953
## [16] 1.06656327681 0.99912145963 1.00911476744 0.93660997584
## [21] 0.93358891636 0.97297971578 0.88066438239 0.98753447531
## [26] 1.05364263020 0.98485770378 0.96635514580 1.07354605200
## [31] 1.02973603214 0.95054846672 1.10761849718 0.99443505892
## [36] 1.00785394002 0.90996501957 1.00659556295 1.08410256508
## [41] 1.17619547483 1.05818515953 1.16587452714 0.85251354540
## [46] 1.02588652963 1.05005447650 0.91445236765 1.01748574754
## [51] 1.08067054463 1.11882140046 1.05423261579 1.00175739274
## [56] 1.12928747002 1.11103573243 1.01261755732 0.91956491565
## [61] 0.99265563800 1.12511308800 0.98894868132 0.88325862965
## [66] 0.96973061366 1.01004060787 1.02853461059 0.89630353259
## [71] 1.00562368118 1.00460315204 1.01814848684 0.94049652150
## [76] 1.10528504209 0.99447382507 0.88733139730 0.95821132858
## [81] 1.00769894047 1.08457348234 0.93990122726 0.85143236329
## [86] 0.88640411758 1.02335019607 1.12515008328 0.98332359603
## [91] 1.00484197584 1.00026512543 1.06183501397 0.92040577473
## [96] 0.85495506266 1.09299865950 0.99335034524 1.03886466412
p=apply(x,na.rm = TRUE,1,sd)
p
```

```
## [1] 1.10919780976 0.96836818201 0.90050071053 1.03433980048
1.03124027279
## [6] 1.00306003072 1.19710910554 0.87786864200 1.01299229424
0.97909774428
## [11] 0.97943691958 1.04147415623 1.05649953669 0.89448965474
0.90236196783
## [16] 0.99911451255 0.87033574301 0.93982398474 1.07186661296
1.00968313867
## [21] 0.98156227837 0.79678541562 0.98272777362 1.02457531990
1.03537920637
## [26] 1.03553849066 1.07231605225 0.90277119701 1.17772988547
1.01142569216
## [31] 0.97865906306 0.94149508076 1.02398847515 0.94278374204
0.97912032465
## [36] 1.13581222059 1.09868237804 0.88207881366 1.05352176288
0.94486103592
## [41] 0.99779898568 0.98224619119 0.94891267138 0.91845352055
0.98619004345
## [46] 0.94378440828 0.87859328503 0.90220081779 0.95599295762
1.06251734466
## [51] 0.93660440460 1.00156391067 1.17081118655 1.00549512384
0.95717689643
## [56] 1.01759633899 1.02229781756 1.16367280245 1.12405073678
0.94067954655
## [61] 1.05101049809 1.13530984077 1.10790440961 1.00045365256
0.93482497344
## [66] 1.20248952864 1.03445731740 1.10425053971 0.95449253930
0.90497850391
## [71] 0.96331372507 1.07278374260 0.79778936367 0.89254374643
0.92761639543
## [76] 1.03617253274 1.05066260751 0.90310290640 0.92520235765
1.15436106656
## [81] 1.06052247912 0.88683107752 1.07156970229 1.05288442078
1.02240543559
## [86] 0.97997753458 0.99412956287 1.14451065629 0.98487909660
0.93298787607
## [91] 1.02996295098 0.93319734497 1.08896719332 0.98462989730
1.01585027761
## [96] 1.16139841524 0.89664991358 1.08804307890 0.92435419649
0.92925765260
```

- Use the apply function to compute a vector whose entries are the count of entries that are 1 or 2 in each column. This should be one line.

```
?sample
?count.fields
#apply(sample(c(1:4),size = 100,replace = FALSE, prob=NULL),1,) Im not sure
what to put in the function
```

- Use the split function to create a list whose keys are the column number and values are the vector of the columns. Look at the last example in the documentation ?split.

```
?split
ma <- cbind(x = 1:10, y = (10:19))
ma

##           x  y
## [1,]    1 10
## [2,]    2 11
## [3,]    3 12
## [4,]    4 13
## [5,]    5 14
## [6,]    6 15
## [7,]    7 16
## [8,]    8 17
## [9,]    9 18
## [10,]   10 19

split(ma, col(ma))

## $`1`
## [1]  1  2  3  4  5  6  7  8  9 10
##
## $`2`
## [1] 10 11 12 13 14 15 16 17 18 19
```

- In one statement, use the lapply function to create a list whose keys are the column number and values are themselves a list with keys: “min” whose value is the minimum of the column, “max” whose value is the maximum of the column, “pct\_missing” is the proportion of missingness in the column and “first\_NA” whose value is the row number of the first time the NA appears.

```
?lapply
```

- Set a seed and then create a vector v consisting of a sample of 1,000 iid normal realizations with mean -10 and variance 100.

```
set.seed(20)
v<- rnorm(1000,-10,100)
v

## [1] 106.268528978380 -68.592446589305 168.546500331661 -
143.259371048501
## [5] -54.656676655322 46.960612237498 -298.971761441412 -
96.901834332655
## [9] -56.170268314964 -65.554091013744 -12.013536785159 -
25.038222413606
## [13] -72.812675584396 122.322085193283 -162.135057001199 -
53.742786885669
## [17] 87.057757954340 -7.177735557523 -18.578218865276
28.921440498494
## [21] 13.668736771290 -24.444022669407 62.222970080615
26.990685741019
## [25] -34.206631448178 -157.206331842053 -69.615954576570 -
```

124.670013121860  
## [29] -257.463643305885 -71.350857841027 -31.631151403810  
149.014576848670  
## [33] 145.614327565194 100.845089348356 -119.734184488477 -  
196.060571637755  
## [37] -101.357884797725 114.556891198713 -1.214528163930  
32.348189505024  
## [41] -91.848301656867 -164.256783707378 45.588214573161 -  
46.902897050655  
## [45] -114.733828003612 -8.182008375248 78.187750575616  
78.186149524293  
## [49] 92.624318512833 -48.130917934618 99.943523714178 -  
13.091713118164  
## [53] 9.033941995119 123.520653499813 63.055233454546 -  
4.379810283588  
## [57] 122.930562968532 -50.811994261189 -91.825710669926  
25.894566992448  
## [61] -4.128393995308 -16.943658824440 -48.481626773716 -  
97.432345744246  
## [65] 109.633066850945 -176.119954697052 106.521207827703 -  
116.966197764970  
## [69] 80.888354012866 -141.750742099905 55.542995599335 -  
76.037182391874  
## [73] 89.158076861175 -78.322353597905 102.132119515168  
28.855128971708  
## [77] -25.076679083255 -56.597665833276 -146.051563876135 -  
12.958576015730  
## [81] -34.076722834205 182.189948898775 -0.286423777166 -  
0.778062564221  
## [85] 8.853980595126 -73.777542248321 -13.584969825277  
1.219617305816  
## [89] 111.094080311352 134.040475442296 210.844339284564 -  
206.802578262966  
## [93] 45.845367627410 -31.651232180587 -16.777807532896  
16.632766931089  
## [97] 118.582346327955 100.106166149731 -69.551433772441  
5.515828722465  
## [101] 44.804306486373 -32.560630415702 111.711602895454  
60.092042656774  
## [105] 81.197043062830 0.951676729800 -20.999238640515 -  
53.448742187102  
## [109] 45.104052126831 -161.505323539673 74.663723899235  
162.286028104214  
## [113] -105.063163854829 -165.045299242036 -69.306618490442 -  
103.091312066751  
## [117] -156.577584740641 181.621545324936 -17.976571611934 -  
47.506864114786  
## [121] 65.434091469556 17.763886098214 95.133558599248  
152.247454069348  
## [125] 71.182877298912 26.631134007263 58.573177046658 -



188.886876833477  
## [129] -78.106652754314 -109.563386408529 -119.774143585085  
107.013505776919  
## [133] -160.166708495200 156.913739973606 -160.846424199567 -  
68.673172793931  
## [137] -76.573062652203 19.535299364528 -119.244128744247  
82.690149296779  
## [141] -41.406668553315 -45.146860514362 19.031143740485  
129.882193882372  
## [145] -34.626369493770 -1.723204798007 11.579588987076  
181.383432163760  
## [149] -57.659808285317 -48.337472586551 97.470931394282 -  
95.723952876538  
## [153] 71.819709415298 -172.960972967246 105.483093076776  
36.717713305819  
## [157] -46.749395055900 -24.563201695316 18.321472679795  
145.200132334750  
## [161] 93.708874784819 23.058970278539 122.801272522219  
23.410243474299  
## [165] 86.942743398947 -189.301945517452 -45.670625010156  
63.314056320168  
## [169] 145.164912553698 22.509028147608 38.013669375036  
41.421034775152  
## [173] 48.925249308704 -65.859366442491 -132.951824010376 -  
148.040139039702  
## [177] -157.939563845686 28.063644229247 124.646214105008 -  
49.216927906720  
## [181] 3.115755902289 33.327790083758 5.357889183278  
165.857542255339  
## [185] 101.073001593568 125.767143316190 131.871488382092  
19.225470678220  
## [189] 13.750659829052 -130.552645498230 57.960386735874 -  
126.689103884355  
## [193] -172.516836632301 -124.082102948870 -2.456713894350 -  
187.444800449437  
## [197] 11.677191652448 75.363891391889 -117.992321008951  
93.197340633349  
## [201] -48.224288717920 -118.557377296061 60.875731620097 -  
96.649034983751  
## [205] 226.681115494555 -76.832510509452 90.867810555721 -  
187.173406136269  
## [209] 38.740583621875 -86.599417689773 64.008267912562 -  
111.494025921751  
## [213] -58.038267237405 -240.988043369437 -131.028885852024  
72.546705488547  
## [217] -90.345694770694 -56.631705532047 74.680901066497  
177.122260389682  
## [221] -72.211421021692 256.787367334921 82.147725426017 -  
74.374835854020  
## [225] -9.135001394999 43.038450857819 -189.654503648027 -

15.240487704486				
## [229]	8.129423327603	-67.687158094335	187.255838368646	-
4.029546484169				
## [233]	16.390028928592	-20.315641712195	-32.690644195002	
283.209205397631				
## [237]	-203.987142446055	-74.630101606388	-115.687526453089	
37.088671638795				
## [241]	-12.020595265182	-100.212039279786	8.215676182992	-
118.279318408770				
## [245]	-165.981752793207	-91.503940345652	-44.041947585447	
136.306813088473				
## [249]	9.010015385086	127.924675244749	64.473705243215	-
164.153637252197				
## [253]	-24.471626526361	99.569223503450	-59.781189256437	-
112.487522647339				
## [257]	-47.551900183048	80.497109273494	50.299924885527	-
83.902942464091				
## [261]	123.541548479339	7.819713501589	13.335530053928	-
60.022908026159				
## [265]	0.569867220242	6.830736935812	-77.822735419423	
76.211686325421				
## [269]	27.317085152615	-29.678937243931	-70.117520791322	
22.326536839390				
## [273]	-72.980145676002	180.965584611333	-120.840758237759	-
81.167349893064				
## [277]	40.731319843792	-49.816738220448	109.798094223744	
140.658397418655				
## [281]	214.643661118431	-262.024763395891	-138.784396986598	-
76.117965998782				
## [285]	-84.317689421629	23.648492779650	12.045371991281	
90.464897593746				
## [289]	-1.062387650932	119.298126014151	50.307776024538	
28.343511055357				
## [293]	25.385525974058	17.390937974660	76.719432929033	
160.002747241181				
## [297]	-28.655189528748	-99.493026174122	-58.075139006524	-
22.256087036343				
## [301]	16.627846243857	7.822236496493	44.898545571350	
20.373558092060				
## [305]	31.253780038725	-22.689312838221	-75.057731687811	-
108.274704451101				
## [309]	-273.257403938857	19.448761780006	7.740929640429	-
41.387426034196				
## [313]	15.579392678062	-64.995707523550	171.629624136234	-
83.959078640914				
## [317]	48.419938162178	-60.166713316195	112.092241707408	
91.172539029326				
## [321]	0.630442581310	-69.710538319282	-99.646310277216	
29.732113330484				
## [325]	19.112454401547	-140.529311832733	-28.190492870413	-

36.548649042350  
 ## [329] 14.295128383832 -180.299304654025 87.645818142295 -  
 22.233283985380  
 ## [333] -76.664925242764 38.505138214034 67.302865763205  
 55.512056585447  
 ## [337] -55.734813612151 192.238378913709 -96.165165677794 -  
 67.467855613720  
 ## [341] 55.904496933536 145.284824508350 -49.039827415650 -  
 75.848848525799  
 ## [345] -7.977316453929 -61.885858286662 -99.877339591593  
 60.864027716273  
 ## [349] 71.466020159781 -15.949930254563 -113.311521027901 -  
 5.552274361029  
 ## [353] 92.049375746057 -274.551546181606 139.238278271954 -  
 236.732113124890  
 ## [357] -19.168601441620 45.302987068470 18.126069676026 -  
 170.421413550800  
 ## [361] -226.444196916863 37.585121348755 4.788682328531 -  
 7.813182787941  
 ## [365] -6.691191183071 -66.789715882401 165.563992133572  
 149.285063106648  
 ## [369] -116.214046458249 -69.637747296847 -206.016316047179 -  
 18.380497756244  
 ## [373] -159.986434679964 -89.993856620744 -101.291634940922  
 78.497655364701  
 ## [377] 66.203417690149 -71.925189413536 35.017322872504 -  
 28.508470294519  
 ## [381] -21.468844094611 -2.729268546664 -153.881070014736 -  
 123.828738303283  
 ## [385] 49.214895366792 21.514508120912 -31.621228353103 -  
 3.590351534833  
 ## [389] -22.253468078210 -160.101304219065 -110.303923226691 -  
 95.807831194147  
 ## [393] -63.609166377403 -156.272046853515 -75.264071697518  
 138.546499057735  
 ## [397] 138.019968552160 -27.695724479100 58.035990121215 -  
 46.752403561173  
 ## [401] -111.902052445577 -69.827020413775 -5.584790542924  
 101.489800456918  
 ## [405] 11.413691566619 9.734516932236 -134.760671765027 -  
 38.368188073294  
 ## [409] -31.572285105505 -129.434348255519 -127.031861176156  
 1.939692228295  
 ## [413] 39.367541446333 -62.762604698173 -72.746467964674 -  
 24.249608893325  
 ## [417] 22.105157938721 95.836488290292 -142.880377209163 -  
 17.103840147891  
 ## [421] -145.812301511195 -84.971657144023 -21.690438942274  
 45.830640791516  
 ## [425] -104.312914548938 -1.815459249990 98.692181185898

206.010705487140				
## [429]	-92.000293386880	119.466809618874	-154.658652055166	-
36.016436623860				
## [433]	46.510826223240	45.185782018693	-66.034063203778	-
47.313302367780				
## [437]	8.085732557761	-6.693465870053	147.952023665187	-
42.901327976122				
## [441]	124.440780948642	-82.219933203049	202.924507263478	
41.026893220666				
## [445]	-103.660084123091	-21.567719372378	44.455448739329	-
120.846067717702				
## [449]	42.359061721888	-55.662525920634	-84.785688274212	
73.696784496558				
## [453]	120.367985124860	192.308898320241	0.642139742727	-
73.737653208257				
## [457]	79.026170469928	92.928393758132	-162.271770692708	-
90.114033864985				
## [461]	138.502894662744	-79.654097924130	17.279628133363	
10.538801822689				
## [465]	134.802470824356	33.534896478818	17.855268350636	-
103.778546182893				
## [469]	109.858996710575	-124.777085199349	-133.528980876201	-
8.626777765151				
## [473]	-116.687419420253	83.217333186363	-149.668563036371	-
42.710038613612				
## [477]	12.775903251635	-79.032586911585	-54.012609877858	
70.947497170629				
## [481]	-84.661619638135	-1.365350859805	263.807302811701	
20.677918822311				
## [485]	-81.215985586274	202.185333947195	-50.973786961622	
134.926095990841				
## [489]	17.974218585262	-28.284431447340	-36.698481278706	-
115.684500933624				
## [493]	66.534519021478	76.086793509116	-159.668037255616	-
227.451830098023				
## [497]	-104.290213981530	26.555959954439	-85.552385973800	-
46.997443167589				
## [501]	43.991990576072	145.283614111205	-113.059531992997	-
223.123376496165				
## [505]	60.766765105363	-8.905234464504	-43.924896519959	-
107.916321243401				
## [509]	-89.087908587513	-167.505551889892	73.688135458876	
93.817105311021				
## [513]	-19.464698374024	163.008012439526	-90.397821978305	-
43.490252857161				
## [517]	151.423960056873	140.400302936507	-84.711853654447	
29.066108300164				
## [521]	109.566988641857	-179.292412916822	-11.173191011548	
7.789086436630				
## [525]	32.600111730920	-11.352736900922	-136.240119262505	-

131.949826549107  
 ## [529] -178.762416050838 168.240871738236 30.591015378145 -  
 92.601734454337  
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## [761]	40.222238290081	-129.624143493921	-3.821531963489
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## [765]	29.957788487980	-186.264647035388	-45.190066406585
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## [769]	-96.958750791461	118.030828414583	47.791682999842 -
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```

- Repeat this exercise by resetting the seed to ensure you obtain the same results.

```

set.seed(20)
v<- rnorm(1000,-10,100)
v

## [1] 106.268528978380 -68.592446589305 168.546500331661 -
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## [5] -54.656676655322 46.960612237498 -298.971761441412 -
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## [9] -56.170268314964 -65.554091013744 -12.013536785159 -
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```

- Find the average of v and the standard error of v.

```
mean(v)
```

```
## [1] -11.505843621
```

```
se<-function(v) sqrt(var(v)/length(x))
se(v)
## [1] 1.018496685
```

- Find the 5%ile of  $v$  and use the `qnorm` function to compute what it theoretically should be. Is the estimate about what is expected by theory?

```
?qnorm
CI = qnorm(1-0.05/2)
k = c(mean(v)-CI*se(v), mean(v)+CI*se(v))
k
## [1] -13.5020604417 -9.5096267999
```

- What is the percentile of  $v$  that corresponds to the value 0? What should it be theoretically? Is the estimate about what is expected by theory?

```
t=ecdf(v)
t(0)
## [1] 0.539
```