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. Most of this will be a pure programming assignment but there are some questions that instead ask you to "write a few sentences". This is a W class! The tools for the solutions to these problems can be found in the class practice lectures. I prefer you to use the methods I taught you. If you google and find esoteric code you don't understand, this doesn't do you too much good.

To "hand in" the homework, you should first download this file. The best way to do this is by cloning the class repository then copying this file from the folder of that clone into the folder that is your personal class repository. Then do the assignment by filling in the TO-DO's. After you're done, compile this file into a PDF (use the "knit to PDF" button on the submenu above). This PDF will include output of your code. Then push the PDF and this Rmd file by the deadline to your github repository in a directory called "labs".

Basic R Skills

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

```
#TO-DO
print(pi,digits =10)
```

```
## [1] 3.141592654
```

- Sum up the first 103 terms of the series 1 + 1/2 + 1/4 + 1/8 + ...

```
#TO-DO
sum(1/(2^(0:103)))
```

```
## [1] 2
```

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

```
#TO-DO
prod(1/(3*(1:37)))
```

```
## [1] 1.613529e-61
```

- Find the product of the first 387 terms of `1 * 1/2 * 1/4 * 1/8 *` ...

```
#TO-DO
prod(1/(2^(0:386)))
```

```
## [1] 0
```

Is this answer *exactly* correct? "no because it's a numerical underflow" #TO-DO

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

```
-log(2)*sum(0:386)
```

```
## [1] -51771.86
```

- Create the sequence `x = [Inf, 20, 18, ..., -20]`.

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

```
##  [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(Inf), log_3(100), log_3(98), ... log_3(-20)]`.

```
x= log(c(Inf, seq(from=100, to =-20, by= -2)), base=3)
```

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

Comment on the appropriateness of the non-numeric values.

NAN occurs because you cannot take the log of a negative number. -Inf occurs when you take the log of 0. you can't take a log of a negative number'

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

```
x>0 & is.finite(x)
```

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

- 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(is.nan(x) | is.infinite(x))
```

```
##  [1]  1 52 53 54 55 56 57 58 59 60 61 62
```

- 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?

```
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  2  1  1  1
## [51]  0 NA NA NA NA NA NA NA NA NA NA NA
```

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

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

```
##  [1] 4.1918065 4.1734173 4.1546488 4.1354851 4.1159093 4.0959033 4.0754476
##  [8] 4.0545216 4.0331033 4.0111687 3.9886925 3.9656473 3.9420034 3.9177289
## [15] 3.8927893 3.8671470 3.8407614 3.8135881 3.7855785 3.7566796 3.7268330
## [22] 3.6959745 3.6640330 3.6309298 3.5965770 3.5608768 3.5237190 3.4849796
## [29] 3.4445178 3.4021735 3.3577628 3.3110736 3.2618595 3.2098317 3.1546488
## [36] 3.0959033 3.0331033 2.9656473 2.8927893 2.8135881 2.7268330 2.6309298
## [43] 2.5237190 2.4021735 2.2618595 2.0959033 1.8927893 1.6309298 1.2618595
## [50] 0.6309298
```

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

```
delta <- 1E-7
grid<- seq(0,1-delta, by = delta)
f<- grid**2
delta*sum(f)
```

```
## [1] 0.3333333
```

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

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

```
## [1] 0.47
```

- 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), 500, replace= TRUE, prob= c(0.1, 0.9)))
```

```
## [1] 0.908
```

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

```
#TO-DO
```

- In class we considered a variable `x_3` which measured "criminality". We imagined L = 4 levels "none", "infraction", "misdimeanor" 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= factor(sample(c("none", "infraction", "misdimeanor", "felony"), size= 100, replace= TRUE))
x_3
```

```
##   [1] infraction  felony      felony      none        felony      infraction
##   [7] misdimeanor felony      none        felony      infraction  none
##  [13] none        misdimeanor misdimeanor felony      infraction  misdimeanor
##  [19] infraction  misdimeanor infraction  misdimeanor misdimeanor misdimeanor
##  [25] none        none        none        infraction  misdimeanor infraction
##  [31] none        none        misdimeanor felony      infraction  none
##  [37] infraction  infraction  felony      felony      infraction  none
##  [43] felony      infraction  misdimeanor infraction  misdimeanor infraction
##  [49] none        felony      felony      infraction  felony      none
##  [55] misdimeanor felony      none        misdimeanor infraction  none
##  [61] felony      felony      misdimeanor felony      infraction  none
##  [67] felony      felony      felony      infraction  infraction  infraction
##  [73] infraction  infraction  felony      felony      none        misdimeanor
##  [79] felony      infraction  none        misdimeanor infraction  misdimeanor
##  [85] infraction  misdimeanor misdimeanor infraction  none        infraction
##  [91] infraction  felony      infraction  misdimeanor misdimeanor infraction
##  [97] infraction  infraction  none        misdimeanor
## Levels: felony infraction misdimeanor 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= as.numeric(x_3_bin)
x_3_bin
```

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

- Use `x_3` to create `x_3_ord`, an ordered factor variable. Ensure the proper ordinal ordering.

```
#TO-DO
```

- Convert x_3_bin into three binary variables without any information loss and put them into a data matrix.

```
X <-matrix(nrow= length(x_3), ncol=3)
X[,1]= as.numeric(x_3== "infraction")
X[,2]= as.numeric(x_3== "misdimeanor")
X[,3]= as.numeric(x_3== "felony")
X
```

```
##       [,1] [,2] [,3]
##  [1,]    1    0    0
##  [2,]    0    0    1
```

```
##   [3,]    0    0    1
##   [4,]    0    0    0
##   [5,]    0    0    1
##   [6,]    1    0    0
##   [7,]    0    1    0
##   [8,]    0    0    1
##   [9,]    0    0    0
##  [10,]    0    0    1
##  [11,]    1    0    0
##  [12,]    0    0    0
##  [13,]    0    0    0
##  [14,]    0    1    0
##  [15,]    0    1    0
##  [16,]    0    0    1
##  [17,]    1    0    0
##  [18,]    0    1    0
##  [19,]    1    0    0
##  [20,]    0    1    0
##  [21,]    1    0    0
##  [22,]    0    1    0
##  [23,]    0    1    0
##  [24,]    0    1    0
##  [25,]    0    0    0
##  [26,]    0    0    0
##  [27,]    0    0    0
##  [28,]    1    0    0
##  [29,]    0    1    0
##  [30,]    1    0    0
##  [31,]    0    0    0
##  [32,]    0    0    0
##  [33,]    0    1    0
##  [34,]    0    0    1
##  [35,]    1    0    0
##  [36,]    0    0    0
##  [37,]    1    0    0
##  [38,]    1    0    0
##  [39,]    0    0    1
##  [40,]    0    0    1
##  [41,]    1    0    0
##  [42,]    0    0    0
##  [43,]    0    0    1
##  [44,]    1    0    0
##  [45,]    0    1    0
##  [46,]    1    0    0
##  [47,]    0    1    0
##  [48,]    1    0    0
##  [49,]    0    0    0
##  [50,]    0    0    1
##  [51,]    0    0    1
##  [52,]    1    0    0
##  [53,]    0    0    1
##  [54,]    0    0    0
##  [55,]    0    1    0
##  [56,]    0    0    1
```

```
##  [57,]    0    0    0
##  [58,]    0    1    0
##  [59,]    1    0    0
##  [60,]    0    0    0
##  [61,]    0    0    1
##  [62,]    0    0    1
##  [63,]    0    1    0
##  [64,]    0    0    1
##  [65,]    1    0    0
##  [66,]    0    0    0
##  [67,]    0    0    1
##  [68,]    0    0    1
##  [69,]    0    0    1
##  [70,]    1    0    0
##  [71,]    1    0    0
##  [72,]    1    0    0
##  [73,]    1    0    0
##  [74,]    1    0    0
##  [75,]    0    0    1
##  [76,]    0    0    1
##  [77,]    0    0    0
##  [78,]    0    1    0
##  [79,]    0    0    1
##  [80,]    1    0    0
##  [81,]    0    0    0
##  [82,]    0    1    0
##  [83,]    1    0    0
##  [84,]    0    1    0
##  [85,]    1    0    0
##  [86,]    0    1    0
##  [87,]    0    1    0
##  [88,]    1    0    0
##  [89,]    0    0    0
##  [90,]    1    0    0
##  [91,]    1    0    0
##  [92,]    0    0    1
##  [93,]    1    0    0
##  [94,]    0    1    0
##  [95,]    0    1    0
##  [96,]    1    0    0
##  [97,]    1    0    0
##  [98,]    1    0    0
##  [99,]    0    0    0
## [100,]    0    1    0
```

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

The sum of each row should be between 0 and 1

Verify that.

```
table(rowSums(X))
```

```
##
##  0  1
## 20 80
```

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

The column sum should be the number of infraction, misdimenors and felony

Verify that.

```
colSums(X)
```

```
## [1] 33 23 24
```

```
table(x_3)
```

```
## x_3
##      felony  infraction misdimeanor        none
##          24          33          23          20
```

- 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<- matrix(NA, nrow=n, ncol=6)
rownames(X)= fake_first_names
X[,1] <- rnorm(n,mean= 17, sd= sqrt(38))
X[,2] <- runif(n, -10,10)
X[,3] <- rpois(n, lambda = 6)
X[,4] <- rexp(n, rate= 1/9)
X[,5] <- rbinom(n, size=20, prob= .12)
X[,6] <- sample(c(rep(1,24), rep(0,76)))
View(X)
```

- 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.

```
df= data.frame(X)
df$X6= factor(df$X6, labels= c("DOMESTIC","FOREIGN" ))
df
```

```
##                  X1         X2 X3          X4 X5       X6
```

```
## Sophia    19.588436  6.6275689  5  2.94911086  2 DOMESTIC
## Emma      16.594066  7.4287948  5 17.43751420  2 DOMESTIC
## Olivia    23.417732  7.9372729  3  1.45806404  1 DOMESTIC
## Ava       20.631764 -0.6216225  6  8.42989772  0 DOMESTIC
## Mia       18.407765  5.1498296  8  4.06953497  4 DOMESTIC
## Isabella  13.220926  2.9833847  2 10.91531903  4 DOMESTIC
## Riley     17.186916 -8.8014560  7 23.68790456  5 DOMESTIC
## Aria       3.659047  8.5901748  2  4.56493296  3 DOMESTIC
## Zoe       27.361417 -7.0108474  4  0.42408291  3  FOREIGN
## Charlotte  8.938633 -8.0594340  6  9.58295182  1 DOMESTIC
## Lily       6.882498 -6.5592934  4 25.42439802  0 DOMESTIC
## Layla     13.089120 -2.6091310  4 16.72138546  4 DOMESTIC
## Amelia    21.268154 -4.3580191  8  6.40800874  1 DOMESTIC
## Emily     10.321773  5.3727022  8  7.90864596  1 DOMESTIC
## Madelyn   21.577996 -8.0149887  5 12.40081681  4 DOMESTIC
## Aubrey     7.352312  0.3572922  1 19.51522220  2  FOREIGN
## Adalyn    18.658917 -7.9574568  5  1.27728759  2 DOMESTIC
## Madison   21.893648  6.9661418 10  7.40824298  3 DOMESTIC
## Chloe     14.903169 -3.6455324  6  7.71245045  2  FOREIGN
## Harper     9.487734  7.4300942  4 10.78803736  3  FOREIGN
## Abigail   13.518814 -4.2674111  6  7.07163341  1 DOMESTIC
## Aaliyah   16.167262 -3.1781298 10  0.07731418  4  FOREIGN
## Avery     28.797762  2.8187350  9  9.81427642  1 DOMESTIC
## Evelyn    26.193220 -8.0883163  3 23.62536352  3  FOREIGN
## Kaylee    11.300559  2.2958754  6 21.49508841  2 DOMESTIC
## Ella      17.860993  4.7664376  4  2.48124496  1 DOMESTIC
## Ellie     15.578251  5.8621211  7  0.05393614  4 DOMESTIC
## Scarlett  20.818216  2.3881505  4  8.46425961  3 DOMESTIC
## Arianna   25.621053 -4.5338291  5  8.16893892  3  FOREIGN
## Hailey    19.155062  2.3948266  6  6.39429872  3  FOREIGN
## Nora      11.979336 -0.2302531  7  3.97051859  2 DOMESTIC
## Addison   20.720620  6.7729903  8  0.84716295  2 DOMESTIC
## Brooklyn  25.853016  8.0350327  4  4.63152672  5 DOMESTIC
## Hannah    24.707563 -0.8474338  5  1.79099031  1  FOREIGN
## Mila       2.612259 -6.2683980  8 25.45415886  1 DOMESTIC
## Leah      21.731191 -8.9126636  9 31.89102831  2 DOMESTIC
## Elizabeth  9.831093  2.8052074  5 12.21423848  3 DOMESTIC
## Sarah      8.310673  5.7571957 13 11.42675871  5 DOMESTIC
## Eliana    22.000074 -3.7540478  6  2.23101696  4 DOMESTIC
## Mackenzie 15.697893 -8.1606728  4 17.98121134  7  FOREIGN
## Peyton     8.486038  1.0350991  7  9.96420223  2  FOREIGN
## Maria     21.494196  4.9013470  7  5.19195733  3  FOREIGN
## Grace     10.108832 -8.5959894  9  4.68926465  1  FOREIGN
## Adeline   23.187812 -0.4258694  4  6.90183122  3 DOMESTIC
## Elena      3.677198  5.6955426  7  0.58931038  3 DOMESTIC
## Anna      15.441046 -4.7610753  7  6.90039896  0  FOREIGN
## Victoria  26.460238  1.1919339 10  8.56421860  1  FOREIGN
## Camilla   19.526379 -4.1418990  2  2.43879602  1 DOMESTIC
## Lillian   14.497430 -8.3443285  6  4.63300292  1 DOMESTIC
## Natalie   14.990142  4.0455018  5  2.73681814  3 DOMESTIC
## Jackson   16.744891 -4.1433364  7 11.08422819  5 DOMESTIC
## Aiden     10.819984 -7.2704248 11  2.02358281  3 DOMESTIC
## Lucas      9.039763  6.4578105  5  9.98972689  1 DOMESTIC
## Liam       6.765750  2.6999805  8  0.17047779  4 DOMESTIC
```

```
## Noah      16.535665 -6.1290851  5  5.16032630  3 DOMESTIC
## Ethan     17.753198 -9.4318934 11  2.75699315  3 DOMESTIC
## Mason     11.171975 -2.5518231  3  6.70993032  3 DOMESTIC
## Caden     17.540117  1.6582711  3 15.75249919  4 DOMESTIC
## Oliver    20.016836 -8.4886770 10  5.76844302  4 DOMESTIC
## Elijah     7.547375  2.2707670  6  1.88511335  1 DOMESTIC
## Grayson   17.910722 -8.6689262  8  7.76647733  1 DOMESTIC
## Jacob     24.105300  8.3311417  5 11.72723690  3 DOMESTIC
## Michael    6.939242  4.7352862  6  3.22109323  1 DOMESTIC
## Benjamin  16.354420  8.1193295 10 30.41308133  5  FOREIGN
## Carter     6.592228  6.2507649  4 11.18072007  2 DOMESTIC
## James     13.077555 -1.4586921 10  3.74580106  4 DOMESTIC
## Jayden    17.100864 -0.8856005  2  3.98370172  3 DOMESTIC
## Logan     14.098244  1.7279636  9 13.44983151  5  FOREIGN
## Alexander 11.470923  8.9328389  7  3.78499369  0 DOMESTIC
## Caleb     12.988070 -2.0191929  9 23.86417474  1 DOMESTIC
## Ryan      17.218678  0.3158008  8 15.98955751  5 DOMESTIC
## Luke      17.194261  5.4954032  8 15.80415558  2 DOMESTIC
## Daniel     2.097976  3.1821169  5  4.83566152  4 DOMESTIC
## Jack      10.733896 -9.5072547  7  3.67932856  3 DOMESTIC
## William    8.750787 -9.7720020  6  3.31821168  0 DOMESTIC
## Owen      15.207485 -5.6038623  2  7.27037290  4 DOMESTIC
## Gabriel   28.086576 -4.8974843  5 13.98890047  1 DOMESTIC
## Matthew   14.245720 -5.1950478  2  4.32131771  3 DOMESTIC
## Connor    21.073286  9.2088511  6  2.61423618  0 DOMESTIC
## Jayce     23.536264  1.8109898  8  7.87982226  3 DOMESTIC
## Isaac     18.359236 -1.4782142  4  1.68367374  1  FOREIGN
## Sebastian 15.872474 -1.3742382  4  0.42786260  3  FOREIGN
## Henry     27.753565  1.2344276  3  6.79029628  1 DOMESTIC
## Muhammad  16.244432  5.4742259  7  4.17154362  3  FOREIGN
## Cameron   14.079194  3.8585896  6 13.40984088  0 DOMESTIC
## Wyatt     15.430162  6.6660095  4  8.61688871  5  FOREIGN
## Dylan      7.581759 -6.1458537  5  1.04789372  3 DOMESTIC
## Nathan    16.799126  1.0631136  3  8.62155720  4 DOMESTIC
## Nicholas   3.615252  2.4650372  5 23.67293307  5 DOMESTIC
## Julian    17.209273  3.8391782  3  4.94620206  3 DOMESTIC
## Eli       23.777661  6.5777440  4  0.28329114  2  FOREIGN
## Levi       5.130785  1.9103229  9  2.68015780  5 DOMESTIC
## Isaiah    16.061065 -0.8348162  8 11.19100276  3 DOMESTIC
## Landon    12.148712  0.7300595  6  8.52513274  0 DOMESTIC
## David     23.931619 -0.5963029  3  9.20364868  3  FOREIGN
## Christian 15.394790  8.6008844 10  1.58560623  0  FOREIGN
## Andrew    20.026069  2.4932918  7  0.27533975  4 DOMESTIC
## Brayden   10.914808  1.1088200  6  8.77858169  4 DOMESTIC
## John      13.363469 -5.1880841  6  9.56456832  1 DOMESTIC
## Lincoln   13.476392  0.1119877  9  5.98565653  2 DOMESTIC
```

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

```
table(df$X6) #should be x6 not x3
```

```
##
## DOMESTIC  FOREIGN
##       76       24
```

```
table(df$X6)/n
```

```
##
## DOMESTIC  FOREIGN
##     0.76     0.24
```

Print out a summary of the whole dataframe.

```
summary(df)
```

```
##        X1               X2                X3              X4
##  Min.   : 2.098   Min.   :-9.77200   Min.   : 1.00   Min.   : 0.05394
##  1st Qu.:11.108   1st Qu.:-4.59064   1st Qu.: 4.00   1st Qu.: 3.15310
##  Median :15.967   Median : 0.88258   Median : 6.00   Median : 6.90112
##  Mean   :15.707   Mean   : 0.03151   Mean   : 6.04   Mean   : 8.37380
##  3rd Qu.:20.177   3rd Qu.: 4.80016   3rd Qu.: 8.00   3rd Qu.:11.10835
##  Max.   :28.798   Max.   : 9.20885   Max.   :13.00   Max.   :31.89103
##        X5             X6
##  Min.   :0.00   DOMESTIC:76
##  1st Qu.:1.00   FOREIGN :24
##  Median :3.00
##  Mean   :2.55
##  3rd Qu.:4.00
##  Max.   :7.00
```

- Let `n = 50`. Create a n x 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 <-matrix(sample(c(rep(0, 1250), rep(1, 625), rep(2,625))), nrow=n, ncol=n)
X
```

```
##       [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13]
##  [1,]    0    0    0    0    0    0    1    0    2     0     2     0     0
##  [2,]    0    0    0    0    0    2    0    2    1     0     0     1     2
##  [3,]    0    2    1    0    0    2    0    1    0     2     2     0     0
##  [4,]    0    2    0    2    0    2    0    0    2     2     2     1     1
##  [5,]    0    1    0    0    1    1    1    1    0     1     0     2     1
##  [6,]    0    0    2    1    0    2    2    1    0     0     0     2     0
##  [7,]    0    1    0    2    0    2    0    0    0     0     2     0     0
##  [8,]    0    0    0    0    0    1    0    0    0     0     0     0     0
##  [9,]    2    0    0    0    0    0    1    0    2     0     0     0     0
## [10,]    0    2    1    1    0    1    0    1    1     1     2     0     1
## [11,]    2    0    2    2    0    0    0    2    0     0     1     0     1
## [12,]    2    1    1    0    1    1    0    0    0     0     1     1     2
## [13,]    1    1    0    0    2    0    1    0    0     0     1     1     0
## [14,]    2    0    1    0    1    0    1    1    2     0     2     0     1
## [15,]    0    0    1    2    0    2    2    2    1     0     0     0     0
## [16,]    0    1    0    1    1    2    0    2    0     1     0     2     2
## [17,]    2    0    2    0    0    0    1    2    0     0     2     1     0
## [18,]    1    0    2    0    1    1    0    0    2     2     2     0     1
## [19,]    0    2    0    2    0    1    0    0    0     2     2     0     1
## [20,]    0    1    1    0    0    1    2    2    0     0     1     0     2
## [21,]    2    1    2    2    1    2    0    0    1     0     0     2     0
## [22,]    2    2    0    2    0    0    1    1    2     0     1     2     0
## [23,]    2    1    1    2    2    0    0    2    0     0     1     2     0
```

```
## [24,]    0    0    0    1    2    0    0    0    1    0    0    2    0
## [25,]    1    1    0    1    2    0    1    1    0    0    2    0    1
## [26,]    1    0    1    0    0    1    0    2    2    1    0    0    2
## [27,]    0    1    2    0    0    1    1    2    0    0    1    1    0
## [28,]    2    0    2    0    0    2    1    0    0    2    1    1    2
## [29,]    0    0    0    1    1    0    1    2    0    0    0    0    0
## [30,]    2    0    0    1    2    0    1    0    1    0    2    1    1
## [31,]    0    0    2    1    0    2    2    0    0    1    1    2    1
## [32,]    0    0    1    2    0    1    0    0    0    0    0    0    0
## [33,]    2    0    0    1    1    0    0    0    1    1    0    0    0
## [34,]    2    1    0    1    1    2    0    0    1    0    0    2    0
## [35,]    1    2    2    0    0    1    0    2    0    2    1    1    0
## [36,]    0    1    0    2    0    0    0    0    1    2    0    0    1
## [37,]    0    1    0    0    0    0    2    2    0    1    0    2    1
## [38,]    0    0    1    1    0    0    0    2    1    0    1    2    0
## [39,]    0    0    0    2    0    0    0    0    1    1    2    2    0
## [40,]    0    1    2    2    1    1    0    0    1    0    0    1    0
## [41,]    2    1    1    0    1    0    2    0    2    0    0    1    0
## [42,]    0    0    1    1    2    0    2    0    0    0    0    0    1
## [43,]    1    2    2    0    0    0    2    0    1    2    1    1    1
## [44,]    0    1    0    2    1    2    1    1    0    0    1    0    1
## [45,]    0    0    2    0    0    0    0    0    0    0    2    1    2
## [46,]    0    1    1    0    0    0    0    2    2    2    1    1    0
## [47,]    0    0    1    1    0    1    0    0    0    2    2    1    0
## [48,]    2    0    0    2    0    2    0    2    2    0    2    0    1
## [49,]    1    2    0    2    1    0    1    0    2    0    0    1    0
## [50,]    0    1    0    0    0    0    1    1    2    2    1    2    2
##       [,14] [,15] [,16] [,17] [,18] [,19] [,20] [,21] [,22] [,23] [,24] [,25]
##  [1,]     2     0     1     1     1     0     2     2     0     0     0     1
##  [2,]     0     2     0     1     0     0     0     1     0     0     2     1
##  [3,]     2     2     0     2     2     2     0     0     0     0     0     1
##  [4,]     0     2     0     1     0     0     2     0     0     1     0     0
##  [5,]     0     0     0     1     2     0     0     2     2     2     1     2
##  [6,]     1     2     0     2     2     2     0     1     0     2     2     0
##  [7,]     0     0     0     1     0     0     0     1     2     0     0     1
##  [8,]     1     2     1     0     0     1     0     1     1     1     1     1
##  [9,]     1     0     0     1     0     1     1     2     0     2     0     0
## [10,]     0     0     2     0     2     2     0     1     0     0     0     2
## [11,]     1     2     2     1     1     0     2     0     1     2     0     1
## [12,]     1     0     0     0     1     1     1     0     2     2     1     0
## [13,]     0     0     0     2     0     2     0     2     0     0     2     0
## [14,]     2     0     1     1     2     2     2     2     0     0     1     2
## [15,]     1     1     0     0     2     0     1     2     0     2     1     2
## [16,]     0     2     2     0     0     1     2     2     1     0     2     1
## [17,]     1     1     2     0     0     2     0     1     0     2     0     1
## [18,]     0     1     2     0     2     0     0     0     2     2     2     1
## [19,]     2     2     2     1     1     0     0     0     0     1     1     0
## [20,]     2     0     0     0     1     2     0     0     2     0     0     2
## [21,]     1     0     2     2     2     2     1     2     0     1     0     0
## [22,]     0     0     2     0     2     2     0     2     1     0     0     0
## [23,]     1     1     2     0     0     0     0     2     0     2     0     1
## [24,]     0     0     1     0     0     1     1     2     2     0     1     2
## [25,]     0     0     0     0     0     1     1     1     2     0     2     2
## [26,]     0     0     1     1     0     0     1     1     0     0     0     1
```

```
## [27,]    0    0    2    1    2    0    2    2    1    0    1    0
## [28,]    0    2    2    2    1    1    1    1    1    1    1    0
## [29,]    0    1    1    1    0    2    0    0    0    0    0    0
## [30,]    1    1    0    0    0    1    0    2    2    0    0    1
## [31,]    2    2    1    1    0    1    1    2    1    2    0    1
## [32,]    0    2    0    1    2    1    0    2    1    2    2    0
## [33,]    1    2    1    0    0    0    0    0    0    2    0    1
## [34,]    0    0    0    2    2    0    0    0    1    0    0    0
## [35,]    2    0    0    2    0    0    2    0    0    0    0    0
## [36,]    2    0    1    0    0    0    1    0    0    0    2    0
## [37,]    1    1    0    2    0    0    1    2    0    1    0    0
## [38,]    2    2    0    1    1    1    0    0    1    0    2    0
## [39,]    1    0    0    2    2    0    0    0    0    0    0    0
## [40,]    2    2    2    0    1    0    1    0    0    0    1    0
## [41,]    0    0    1    2    0    0    0    1    0    2    0    1
## [42,]    0    0    1    2    0    2    2    0    2    2    0    0
## [43,]    0    0    0    1    2    0    2    1    0    2    0    0
## [44,]    0    0    2    0    2    0    2    0    0    0    2    0
## [45,]    0    2    0    1    0    0    0    1    0    1    1    1
## [46,]    0    0    2    0    2    1    0    0    2    0    2    0
## [47,]    0    0    2    1    2    0    2    0    0    0    0    0
## [48,]    2    0    1    0    0    0    0    2    1    2    1    0
## [49,]    1    2    0    2    2    2    1    2    2    0    2    1
## [50,]    0    2    1    0    0    0    0    0    1    0    0    0
##       [,26] [,27] [,28] [,29] [,30] [,31] [,32] [,33] [,34] [,35] [,36] [,37]
##  [1,]    1    1    0    2    1    0    0    1    0    0    0    2
##  [2,]    1    2    0    1    0    2    2    0    0    1    0    0
##  [3,]    2    2    0    0    2    2    2    2    2    1    0    1
##  [4,]    1    2    0    0    1    2    1    2    2    0    1    1
##  [5,]    1    0    1    2    1    1    0    0    2    0    0    0
##  [6,]    0    0    0    0    0    2    2    1    1    0    0    0
##  [7,]    2    0    0    2    2    2    0    0    0    0    0    2
##  [8,]    2    0    1    0    0    2    1    2    2    0    0    0
##  [9,]    2    2    0    0    2    0    2    1    2    1    1    2
## [10,]    0    0    2    2    0    0    0    1    2    1    1    2
## [11,]    0    0    0    2    0    1    0    0    2    2    2    1
## [12,]    2    0    1    0    0    2    1    2    0    1    0    0
## [13,]    2    1    1    0    1    1    0    1    2    0    2    2
## [14,]    2    0    0    0    0    2    0    2    0    0    0    1
## [15,]    0    2    1    2    2    0    0    0    0    0    0    0
## [16,]    0    0    0    0    1    0    1    2    0    0    1    1
## [17,]    0    1    0    2    0    0    0    0    0    0    0    2
## [18,]    1    1    2    0    1    2    1    0    0    0    0    1
## [19,]    2    1    0    2    0    2    2    2    0    0    0    0
## [20,]    0    1    0    0    0    2    1    2    0    2    0    2
## [21,]    0    0    0    1    0    0    0    0    0    0    1    0
## [22,]    2    0    2    0    1    0    2    2    2    0    0    1
## [23,]    0    0    2    1    1    0    2    2    2    0    1    1
## [24,]    0    1    2    2    2    1    0    1    0    0    0    2
## [25,]    2    0    2    1    1    0    0    2    1    0    0    0
## [26,]    1    1    0    0    1    1    0    2    0    2    0    0
## [27,]    1    0    0    1    0    0    1    0    1    0    2    0
## [28,]    0    2    0    1    0    0    1    2    0    0    2    0
## [29,]    0    0    0    2    0    1    0    2    2    0    0    1
```

```
## [30,]    0    1    0    2    2    1    0    0    0    1    0    0
## [31,]    2    0    0    2    1    2    0    0    2    0    1    2
## [32,]    0    1    0    1    0    1    0    0    0    0    2    1
## [33,]    0    1    1    0    0    0    0    1    1    1    0    1
## [34,]    1    1    0    0    0    1    0    0    0    0    0    0
## [35,]    2    2    2    0    0    0    0    1    1    0    0    2
## [36,]    0    2    2    0    0    0    1    1    0    0    0    0
## [37,]    2    1    0    2    0    0    0    1    1    0    2    0
## [38,]    0    2    2    1    0    2    1    1    0    1    0    0
## [39,]    2    0    0    1    1    0    0    1    0    2    2    0
## [40,]    1    0    0    2    2    1    0    1    0    2    0    1
## [41,]    0    0    0    2    0    0    0    0    2    2    0    2
## [42,]    1    0    1    1    1    1    0    1    1    0    0    0
## [43,]    0    2    0    1    1    0    0    1    0    2    0    2
## [44,]    2    1    1    0    1    0    2    2    0    0    2    1
## [45,]    0    1    2    0    0    2    1    1    0    2    0    2
## [46,]    2    0    2    0    0    1    0    1    1    0    0    2
## [47,]    1    0    2    0    2    0    0    0    2    2    1    0
## [48,]    2    0    2    1    0    1    1    1    2    0    0    2
## [49,]    2    0    1    1    2    0    0    0    2    0    1    0
## [50,]    2    2    1    0    0    0    0    1    0    0    1    0
##       [,38] [,39] [,40] [,41] [,42] [,43] [,44] [,45] [,46] [,47] [,48] [,49]
##  [1,]    2    0    1    2    1    0    2    2    1    1    0    2
##  [2,]    1    1    0    0    1    0    1    2    1    1    0    0
##  [3,]    0    0    0    1    2    0    2    0    0    1    0    2
##  [4,]    0    0    1    2    1    1    1    2    0    2    1    1
##  [5,]    2    0    0    0    0    2    0    0    0    0    0    0
##  [6,]    0    2    0    0    2    0    0    2    0    2    1    2
##  [7,]    1    0    1    2    0    2    0    2    2    0    1    1
##  [8,]    1    2    1    0    1    1    0    0    0    0    1    0
##  [9,]    0    1    0    0    1    0    1    1    2    1    0    2
## [10,]    0    1    0    0    1    1    1    0    0    2    1    1
## [11,]    1    2    1    0    0    2    1    1    2    1    0    0
## [12,]    0    0    1    1    0    0    1    1    0    2    2    0
## [13,]    0    1    0    0    0    0    1    1    0    1    0    2
## [14,]    1    1    0    2    1    2    0    0    0    2    2    2
## [15,]    0    0    1    0    2    0    1    1    0    1    0    0
## [16,]    2    0    0    1    2    0    1    0    0    0    1    2
## [17,]    1    0    2    0    2    2    2    2    0    2    2    1
## [18,]    0    2    0    2    0    0    0    2    2    0    2    0
## [19,]    0    1    2    1    0    1    0    0    1    0    2    0
## [20,]    0    2    2    1    0    1    1    2    1    0    2    0
## [21,]    1    2    1    0    2    2    0    0    0    1    0    2
## [22,]    0    2    2    1    1    1    1    1    0    2    2    2
## [23,]    2    1    0    1    1    2    0    1    1    0    1    0
## [24,]    1    2    2    0    1    0    0    0    0    2    0    1
## [25,]    1    0    0    0    1    1    2    2    0    2    0    0
## [26,]    0    2    0    0    0    0    0    2    2    1    2    2
## [27,]    0    2    0    0    1    1    0    1    0    1    0    0
## [28,]    2    0    0    1    0    0    2    0    1    1    0    2
## [29,]    0    0    2    0    0    0    2    0    1    1    1    2
## [30,]    0    0    0    2    0    1    0    0    0    2    0    0
## [31,]    1    0    0    0    1    0    0    0    2    0    0    2
## [32,]    0    0    0    0    2    0    2    0    0    2    1    2
```

```
## [33,]    0    2    1    0    2    0    0    0    1    0    0    1
## [34,]    1    2    2    0    2    0    0    2    2    0    1    0
## [35,]    0    0    0    2    1    0    1    0    1    0    1    2
## [36,]    0    0    2    0    0    0    2    0    0    0    0    1
## [37,]    2    2    0    0    1    0    1    2    0    0    2    0
## [38,]    2    0    0    0    0    1    2    2    0    0    1    2
## [39,]    1    2    0    0    0    0    1    2    2    2    1    2
## [40,]    0    0    0    2    2    0    0    2    2    1    0    1
## [41,]    0    0    0    1    0    0    0    0    2    0    0    1
## [42,]    0    1    0    2    0    2    0    0    0    0    2    0
## [43,]    0    2    1    0    0    1    0    1    0    2    0    0
## [44,]    1    1    0    0    0    0    0    0    0    0    2    0
## [45,]    0    1    2    0    0    1    0    1    1    0    0    2
## [46,]    0    2    0    2    1    0    2    1    2    0    1    0
## [47,]    0    0    0    0    0    1    0    2    0    1    1    0
## [48,]    2    2    0    0    0    0    0    0    1    2    2    0
## [49,]    2    0    2    1    0    0    0    1    1    0    0    1
## [50,]    2    2    2    1    0    0    2    0    0    0    1    0
##       [,50]
##  [1,]     2
##  [2,]     1
##  [3,]     0
##  [4,]     1
##  [5,]     0
##  [6,]     2
##  [7,]     0
##  [8,]     1
##  [9,]     2
## [10,]     1
## [11,]     2
## [12,]     2
## [13,]     0
## [14,]     0
## [15,]     1
## [16,]     2
## [17,]     2
## [18,]     1
## [19,]     0
## [20,]     1
## [21,]     1
## [22,]     0
## [23,]     0
## [24,]     2
## [25,]     0
## [26,]     0
## [27,]     0
## [28,]     2
## [29,]     1
## [30,]     2
## [31,]     0
## [32,]     0
## [33,]     2
## [34,]     0
## [35,]     0
```

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

- 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) #creating a 100x100 matrix that generates 100^2 random numbe
for (i in 1 : n){
  for (j in 1 : n){
    if (runif(1) < 0.3){
      X[i,j] = NA
    }
  }
}
X
```

```
##               [,1]        [,2]        [,3]          [,4]        [,5]
##   [1,] -0.60323904 -2.28250639 -1.26564015  1.7575390489  1.12170029
##   [2,]          NA -1.00001444 -0.34360776            NA          NA
##   [3,] -0.38766840 -0.14545257  0.63355906  0.8022355413 -1.07240382
##   [4,]  0.97484739          NA          NA -0.3100327059 -0.38386233
##   [5,]  0.89984131 -0.93535199          NA            NA -1.13150363
##   [6,] -0.95826045 -1.15533029          NA -0.7841679908 -0.51015545
##   [7,] -2.70125230 -0.21293633  0.07280230 -0.6504311482          NA
##   [8,]          NA -0.04863960          NA -1.6396621074          NA
##   [9,]          NA          NA          NA            NA  1.10784637
##  [10,]          NA  0.31929624          NA            NA  0.83486768
##  [11,] -0.27076307  0.29968745 -0.21609826            NA  0.10603737
##  [12,]  0.84588359 -0.18727400          NA  0.5829805034 -0.62117390
##  [13,] -0.99514342  0.67874630  0.12123073            NA  0.85752532
##  [14,] -0.92397820 -1.00735343          NA -0.0640108084 -0.66649876
##  [15,]          NA  0.28722245  0.40797570            NA  1.03625517
##  [16,]  0.17536346 -0.38931757  0.42973318  0.7728990261  0.92774489
##  [17,]          NA -0.35285390  0.03443224 -0.8116417268 -0.01576986
##  [18,]  0.25524864 -0.82904204 -1.33672006  2.0685291443  0.47887912
##  [19,] -1.20585327          NA  0.57532133            NA  1.36611116
##  [20,]  0.08709296  1.79660293  0.49068584 -2.0091433038          NA
##  [21,] -1.32634662          NA -0.52353615 -1.2821388635          NA
##  [22,]          NA  1.14354839 -0.62425639 -2.1059756951  0.97175926
##  [23,]          NA -0.98477577 -1.15429609 -1.6245145067          NA
##  [24,]  0.11555107 -0.33548251          NA  1.0454221569          NA
```

```
##  [25,]          NA  0.87046759 -0.49816094           NA  1.84306188
##  [26,] -0.64499227  0.97342360 -0.38908323 -0.0730878986          NA
##  [27,]  0.59590493          NA -0.78807954           NA  2.14341470
##  [28,] -0.57987868  0.09634652  0.15215914 -0.8127603353 -0.67627386
##  [29,]          NA  0.55014575 -0.09018631           NA -1.85240023
##  [30,]  0.52067781 -0.71305433 -0.27723764 -0.5335140279  0.15668408
##  [31,]          NA  0.62425647 -0.50458870 -0.1560993714  0.97885472
##  [32,]          NA  0.22863143 -1.56765730  1.2852197337  0.24251962
##  [33,] -0.01826712 -0.08474477 -0.69550643  0.5127302368  1.19916120
##  [34,]          NA -0.88037517 -0.14439020  0.0713252552 -0.11365648
##  [35,]          NA  0.17054267          NA           NA          NA
##  [36,] -1.73247750  2.73412662          NA  0.1222355501          NA
##  [37,] -1.77492506 -0.12343598  1.05511566           NA -0.14265380
##  [38,]  1.18912250 -0.14438405 -0.54059367 -0.7651098077  0.37024519
##  [39,] -0.13978557  0.98860520  0.41205916           NA  0.33601531
##  [40,]          NA -0.12214132  1.20836368  1.9237017005 -2.91357709
##  [41,]          NA -0.94367721  0.91024032           NA  0.94224818
##  [42,]          NA  0.52393243 -0.90879655           NA -0.16352196
##  [43,]          NA -0.83424566  0.74605089  1.5627633111  0.45988130
##  [44,] -0.37901502          NA  0.07077808 -0.2264299616          NA
##  [45,]  0.77552444 -0.19068824  1.59293866           NA  0.79585045
##  [46,] -0.37082682          NA          NA -1.0569037383  1.05945202
##  [47,] -0.60964948  1.43011493          NA  1.3278067246          NA
##  [48,]  0.52222880          NA          NA -1.3811787609 -0.87860984
##  [49,]          NA  2.36560028          NA -1.2785649049          NA
##  [50,]          NA -0.02362587          NA           NA  0.29022177
##  [51,]          NA          NA -1.96364161 -0.6772396701  0.61481846
##  [52,]          NA          NA -1.00693777 -0.8047058505  1.80948550
##  [53,]  0.54296472          NA  0.89281988 -2.0977000019  1.28263251
##  [54,] -0.47484436  0.76054628  0.23976078           NA -0.65726822
##  [55,] -0.79910161          NA -0.20959990  1.0553185471 -0.72522771
##  [56,]          NA  1.17213333 -1.39445435  0.6287026538 -0.05715118
##  [57,]  0.23525884 -1.23601572          NA  1.2320460650          NA
##  [58,]          NA -0.95722233          NA -1.1170099404 -0.20276048
##  [59,] -0.75637659 -0.71197846  0.17148385           NA          NA
##  [60,]  0.06945601          NA          NA -1.4257767993          NA
##  [61,]          NA -1.46518873          NA           NA          NA
##  [62,]          NA -0.61781835 -0.30868939  0.6638318239 -0.30695358
##  [63,]          NA -0.70004931 -0.10920170 -0.5270691643  0.01032172
##  [64,]  0.55122812 -0.71981529          NA           NA -0.06446864
##  [65,] -0.84248477          NA -0.97205065           NA          NA
##  [66,]  0.31123923          NA  0.99331359 -0.0850710934          NA
##  [67,]  0.65118348          NA -1.29153023 -0.1447936030 -0.60273649
##  [68,]          NA  1.99681429  0.17764347 -0.9238963918 -0.60448544
##  [69,]          NA          NA -1.29460731 -1.6024097369  0.40054521
##  [70,]  1.28235635          NA          NA -0.4585313187          NA
##  [71,]  0.41783831          NA  1.72937249 -1.4831523353 -1.40635878
##  [72,] -1.10001238 -1.57046194 -0.67618591 -1.0663088905  0.89426843
##  [73,]          NA -0.06326678 -0.74111112 -1.5672181806  0.89222023
##  [74,] -1.24308939          NA  1.50098874           NA  0.28967159
##  [75,]          NA -0.81614124  0.25583836           NA  0.70986593
##  [76,]  1.00842726  0.19596097  1.12601133 -0.2641873155  0.80473755
##  [77,]  0.13617486          NA          NA           NA          NA
##  [78,] -1.28324358  0.05845737 -0.55825263  0.8261259380          NA
```

```
##  [79,]          NA  0.16606389          NA            NA  0.57080127
##  [80,] -0.33828602  0.21474699          NA            NA -0.95692153
##  [81,]  0.12874895 -0.86930122  0.28077395  1.5559217343          NA
##  [82,] -0.80228101          NA -0.94510175 -0.1703496860  0.56810744
##  [83,] -0.72709484  0.44866305  2.62563458  0.5323060112          NA
##  [84,]          NA -0.03446098          NA            NA          NA
##  [85,] -0.93590714  0.83545794  1.50711913  1.2315794797          NA
##  [86,]          NA          NA -0.44601637            NA  0.25052457
##  [87,]  1.52605742 -1.36593732 -1.68360794  0.0004538922  1.36037351
##  [88,] -0.85186837 -0.38368925 -1.89321103  0.9447321847  0.77720112
##  [89,]          NA  0.93706788          NA            NA  1.72496016
##  [90,] -1.38575429  1.56789810          NA            NA          NA
##  [91,]          NA  1.07968400          NA -1.2894483995 -0.71754329
##  [92,]          NA -1.53683441 -0.25851211            NA          NA
##  [93,] -0.74678605  0.43702530          NA  1.6006982238          NA
##  [94,]          NA  0.03533648          NA  1.2279850342  0.30349631
##  [95,]  0.71178770  1.36748847 -1.95207615  0.0841295500          NA
##  [96,]  1.27641842  0.73771704 -0.01834823  0.7469832983 -0.33015869
##  [97,]          NA  1.74487583  0.37905358            NA          NA
##  [98,]          NA  1.94502418  0.49062266 -0.0775883679 -2.04329172
##  [99,]          NA -0.61237216 -1.86647330 -0.6425444632          NA
## [100,] -0.03633307 -0.80851813  0.07879086 -1.4189736279 -0.29410610
##                [,6]         [,7]        [,8]         [,9]        [,10]
##   [1,]           NA  1.879926553  1.15945133           NA -0.600980266
##   [2,] -0.062740519  0.107635460          NA -0.275969189 -0.130481771
##   [3,] -0.383937919 -0.809165844  0.31845246           NA -0.493799817
##   [4,]  1.068491664           NA          NA -0.461122029 -0.385513345
##   [5,]           NA  0.797871832  1.72202049           NA          NA
##   [6,]  0.238253221  0.146771968          NA           NA          NA
##   [7,] -1.697588711           NA  0.04680320  2.334653285  0.336008006
##   [8,]  1.692673566  1.018843828  0.46502748           NA          NA
##   [9,]           NA -0.928735084          NA -0.281048236  1.515790504
##  [10,] -1.903839093  1.073578233          NA  0.728063508 -0.058331844
##  [11,]           NA  0.066858649 -0.28506821  0.357315912 -1.326076676
##  [12,]           NA -0.543295600 -0.47868150           NA -1.397338104
##  [13,] -1.408654424  0.340948479 -0.90442773           NA  1.664697559
##  [14,]  0.916562813  0.191790879 -0.10300731           NA          NA
##  [15,] -0.437604298 -1.323799079          NA -1.525688413  0.719075756
##  [16,] -0.893572859 -0.640640451          NA -1.365930620  0.339115204
##  [17,]           NA  0.220791552  0.08202100  0.390185632  0.829060674
##  [18,]           NA  0.356474186 -1.98203869 -0.092715389 -0.970969290
##  [19,]           NA           NA -1.35598090 -0.733544796 -0.084673842
##  [20,] -0.185531048 -1.494744418  1.34546019           NA          NA
##  [21,]           NA           NA -0.30428396 -1.202261264          NA
##  [22,]           NA           NA -0.80953550 -0.156653986  0.667655612
##  [23,] -1.999606476  0.009086448  0.56488064  0.311369645  0.301783356
##  [24,]           NA  0.247483409 -0.29786071  1.089126649 -2.029604979
##  [25,]  0.189920382  0.770541940  1.73214656 -0.141505921  0.756359604
##  [26,]  0.200613024 -0.498666158  0.99668364 -0.284490969 -0.880165115
##  [27,]           NA -0.319681548          NA  0.241516351 -0.459485402
##  [28,]  0.909493061           NA  0.09629569  0.938814950  0.225225042
##  [29,]           NA           NA  1.34077568  0.293687126 -0.093467326
##  [30,]  0.218201960           NA          NA           NA  0.896999360
##  [31,]  0.567512394  0.158707201  0.15139459           NA  0.101117028
```

```
##  [32,] -0.246343005 -0.550894399  0.08678423          NA  0.796049965
##  [33,] -0.338768796  0.248812458          NA  1.738878000  0.003501159
##  [34,] -1.547752149  0.673519078  0.82835602  0.386006837 -1.127636006
##  [35,]           NA  0.398045621          NA  1.913254895  0.754551651
##  [36,] -1.280445511           NA -0.55787685          NA -0.958395478
##  [37,] -0.008704457 -0.316343452 -0.24277989 -0.294516707 -0.042727136
##  [38,] -0.302366725  0.964529165  1.87704452  1.284969410 -0.930335318
##  [39,]  0.067944043           NA -0.27599426 -0.009844692          NA
##  [40,] -0.263151193  1.575296706 -0.71110904 -1.130771972 -1.115647933
##  [41,] -0.892770383  0.120110727 -0.20538582  0.796736820 -1.002387911
##  [42,] -0.303322417           NA -0.47547169          NA  2.088790209
##  [43,] -0.836279511 -0.355569636          NA  0.511972386          NA
##  [44,] -0.538064459  0.378403940          NA -0.244916025 -0.071571850
##  [45,]  2.217176286           NA  0.68298201  0.861223914  0.020421492
##  [46,]           NA           NA  0.60701636  0.635899828 -0.787446609
##  [47,]  1.122154551 -1.070843303          NA          NA  0.885469060
##  [48,]  0.407437129 -0.131923551 -1.37845068 -0.286015522 -1.317212890
##  [49,] -0.155938685 -0.404997349 -0.92153336  0.407828594 -0.224057362
##  [50,]           NA           NA  0.70077607          NA  0.343266502
##  [51,]  0.882269684 -1.232698064  0.45207966 -1.979464112          NA
##  [52,]           NA           NA  0.94628465  0.721101413  0.084634237
##  [53,]  1.400030291           NA          NA          NA          NA
##  [54,]           NA           NA          NA  0.182068879          NA
##  [55,] -0.727687667           NA -1.37423607 -1.583763352  1.500833942
##  [56,]           NA           NA -0.08880470 -0.572533421 -0.114129391
##  [57,]  0.630577486 -0.311747374 -0.34320548          NA  0.837617960
##  [58,]  0.726168067 -0.751839883  0.81927479 -1.150208159          NA
##  [59,] -0.241045441           NA          NA          NA  0.097506655
##  [60,]  0.525344791  0.290007218  0.68094592          NA  0.814060892
##  [61,] -0.417325197           NA          NA  1.245581983 -0.607211734
##  [62,] -0.474270918 -0.963859016  2.43014147 -1.119472482          NA
##  [63,] -0.057212353  0.138048029  0.58782034  0.019854972  0.815287203
##  [64,]           NA  0.118878984  1.26045653  0.457384190  0.727300487
##  [65,] -1.770405829  0.647666736 -1.75855822          NA  0.259127717
##  [66,]  1.777218599 -1.066886878 -0.63726886  1.934887930  0.182942305
##  [67,] -0.255324434 -0.008292980 -0.30789811  0.276307026 -1.040345788
##  [68,] -1.538566978 -0.279039008          NA  0.068212110  0.919457505
##  [69,]  0.703232040  1.469771449 -0.95769208 -0.739909198          NA
##  [70,]           NA           NA -1.78614184  1.141282588  1.608563774
##  [71,]           NA  1.547320544          NA -1.930601529 -0.045307888
##  [72,] -0.266863371  0.521992609  0.71631032          NA          NA
##  [73,] -1.068858759 -1.927436748 -0.73269190          NA  1.131439316
##  [74,]  0.302524887 -0.111559089          NA          NA  0.589169717
##  [75,]  1.019338068 -0.577000299  1.13836538 -1.163138516 -0.534209639
##  [76,] -1.448057292           NA -0.43010418 -0.991804326 -1.203326257
##  [77,] -1.252568892 -1.015171857 -0.87469130 -0.033252753 -0.046493107
##  [78,]  0.682856184 -2.081595809  1.35237228 -0.355946040  0.427975620
##  [79,] -0.207330687  1.982303785  0.70715379  0.273740963 -0.821756020
##  [80,]           NA  1.016171946  1.34626830 -0.577340510  0.803974132
##  [81,] -0.789423783           NA  0.03473249  0.591554007 -0.532826588
##  [82,] -1.862727515  0.379510914          NA  1.090341707  0.162530830
##  [83,]           NA  0.156619776 -0.44069424  0.837349918          NA
##  [84,] -0.425534417           NA -0.21530129          NA -1.324489341
##  [85,] -1.721959918 -0.030730206 -0.32025481          NA  0.497455667
```

```
##  [86,]  0.454607518           NA  0.64801155  1.450862796  0.857947276
##  [87,]  0.279087617  0.628250717  1.45661772           NA           NA
##  [88,]  0.462206419 -1.298060139  1.44602532  0.672543427  0.507883443
##  [89,]           NA -0.296498475          NA  0.971795567  1.051841176
##  [90,] -1.067175378  0.733379711          NA -1.973685811 -1.271616421
##  [91,]  0.567144460  1.153747063  0.02609826           NA           NA
##  [92,] -0.039925065           NA -0.01371731 -2.663976172  0.826929478
##  [93,] -0.197347849           NA -1.01032639           NA           NA
##  [94,] -0.723853793           NA  0.04264334           NA -1.042474414
##  [95,]  0.425103757  0.676638727  0.21370103           NA  1.903341217
##  [96,]  0.806536743           NA          NA  0.765880972  0.237516763
##  [97,]           NA           NA          NA           NA  0.051698171
##  [98,]  1.314196512  0.539484481  0.42725048           NA  2.449404126
##  [99,]           NA  0.345343211          NA  0.985396613           NA
## [100,] -0.096237925 -1.029212861  0.57375722  0.958160818  0.311735368
##               [,11]       [,12]       [,13]       [,14]        [,15]
##   [1,] -0.288922069          NA          NA          NA           NA
##   [2,]           NA  0.31501071 -1.16551326 -2.22042878  0.064816865
##   [3,]           NA          NA          NA  0.73772419 -0.263030765
##   [4,] -0.821309179          NA  2.28054855  1.75957070  1.702356450
##   [5,]  1.482474540  1.35910278  0.76123321  1.13681840  0.682009132
##   [6,]  0.245206631 -0.41641759  0.36507090 -0.78084704           NA
##   [7,]  0.591729467          NA  0.55426881  0.24231425 -1.607322425
##   [8,]           NA -1.69305616 -1.33371385  1.14903673           NA
##   [9,] -0.735010808  0.46759338 -0.58848800 -0.52330763  0.965475641
##  [10,]           NA          NA -0.07092519 -1.16409095  1.380078965
##  [11,]           NA  2.40856120          NA          NA -0.048124173
##  [12,] -0.217471123  0.08536013          NA  1.49110709 -1.360415717
##  [13,]           NA  1.16728396  0.99535446 -1.68910913  0.029602698
##  [14,]           NA -0.28559233 -0.58953381 -0.91624399  2.212302349
##  [15,] -0.552009136 -1.08764074 -0.98616744          NA  0.653077258
##  [16,] -1.126933303          NA          NA  1.06407638  1.017244979
##  [17,]           NA -0.78013980          NA  0.12866491 -0.291606619
##  [18,]           NA -0.48346553          NA  0.31380200  1.587182394
##  [19,] -0.263465825  0.20075361 -0.77962634  0.94451583 -0.183600033
##  [20,]  2.894848541  1.10123518  1.21168697 -0.59203215  0.582053126
##  [21,] -0.804287554  0.44466344  0.30487003  0.64306012  0.163960470
##  [22,] -2.612498540  1.26840555          NA -0.66067548  0.882356130
##  [23,]  1.347474014  0.84554993          NA          NA  0.641967572
##  [24,]  0.587275663  0.49096788          NA          NA  1.010919116
##  [25,] -1.166918437 -0.69132017  0.85405485          NA           NA
##  [26,]  1.338399344 -0.39283415 -0.30245139          NA  1.114609104
##  [27,] -0.340961538 -1.24534691          NA          NA -0.920768185
##  [28,]  0.546618684 -0.13626134 -1.04028753  0.90531007           NA
##  [29,]  0.566257736 -0.19649398 -0.15293819 -0.34852857 -0.956242334
##  [30,]  0.486657196  1.85338589 -1.25379942 -0.44628153 -0.276709833
##  [31,] -0.410735330  1.21658360          NA -0.08846914  0.846827934
##  [32,]  0.336690616 -0.76381754 -2.45979806          NA -0.175012503
##  [33,]           NA          NA  0.88021200  0.10335662  0.110665192
##  [34,]  0.377461649 -0.54244827          NA  0.43196491           NA
##  [35,] -1.352541785          NA          NA  1.65706028           NA
##  [36,] -0.640664098  0.30240975          NA          NA           NA
##  [37,] -1.423163913 -0.92344234  0.03821737 -0.05800918 -0.324793985
##  [38,]  0.560290861  0.07378605  1.17412965 -0.35749947  1.714228162
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##  [39,] -0.135640745  0.45876841          NA          NA           NA
##  [40,]           NA          NA  0.95345411 -0.03097395 -0.092983384
##  [41,]  1.307279534          NA -0.10645713          NA  1.155964602
##  [42,]           NA  1.03488952          NA -0.21886561 -0.358276208
##  [43,]  0.639907933 -0.61066928  1.33202264          NA  0.864408540
##  [44,]  1.541167723          NA          NA  1.06841644  0.642370229
##  [45,]  0.771999630  0.71334453 -0.85534570  1.81140373           NA
##  [46,]  0.963156835          NA  0.56509338 -0.51848165 -0.681211599
##  [47,] -0.573767927 -0.14872530  0.20909106  1.50088866 -0.345275896
##  [48,] -0.280768927  0.77663648  0.79618648  0.16092008 -0.674940562
##  [49,]  0.301461936          NA  0.53250596  0.93418310  0.302161588
##  [50,]  0.879534730 -0.20231187 -0.80120619 -0.05273674  0.654512499
##  [51,]  1.024356343  1.68833269  0.35081474          NA -0.217941174
##  [52,] -0.125314521 -0.81304137          NA -0.75041287 -0.614245630
##  [53,]           NA  1.90969552          NA          NA           NA
##  [54,]           NA  2.28419559 -0.52934128  0.82710103 -0.454255759
##  [55,] -1.034789060 -0.95420209 -0.30671032 -0.58716224 -1.908320712
##  [56,]  1.419427950 -0.29595984  0.73251655          NA -1.430985823
##  [57,]           NA -0.59024217 -0.73310532          NA  1.684697319
##  [58,]  0.007556305 -0.58227887  0.69025944  0.61542749  0.036476214
##  [59,] -1.817396699  0.93051270 -0.68948845  0.46654549  0.362303808
##  [60,]           NA  0.12717575 -1.19530961          NA  1.804066726
##  [61,]  1.040007208  0.14579114  0.09792748          NA           NA
##  [62,] -0.153883306 -0.40675332 -0.23476528  0.07899017 -0.497138761
##  [63,] -0.278036866          NA          NA -1.46116033 -1.422763351
##  [64,]  0.388490624  1.94332633  1.88805955  0.56941306  0.849196843
##  [65,]  0.938723034          NA  0.11645041 -1.75162266  0.405507184
##  [66,] -0.128051679 -0.57704359          NA  0.36930659  0.017803698
##  [67,]  0.232035005  2.20900170 -1.07661367          NA -0.118053106
##  [68,]           NA  0.21433446  0.69972717  1.46414869 -0.123405739
##  [69,] -0.916108947 -1.59746763          NA -0.36187209 -0.148104694
##  [70,]           NA          NA  0.12107505          NA           NA
##  [71,]  0.229910108          NA -2.64873315  0.51313489           NA
##  [72,]  0.707134813 -0.21353424  1.61619711 -0.44224997  0.594556870
##  [73,]  1.671091722 -0.14031492 -0.32112996  0.52625195           NA
##  [74,] -0.513510982 -2.21031215 -0.47637675 -0.17383641  1.801300981
##  [75,]           NA          NA -0.31392027          NA -1.302073404
##  [76,]  0.262127374  0.74423275  0.03420169  0.71153711           NA
##  [77,] -1.415325597  0.20233413  0.61256739  0.66207020           NA
##  [78,] -1.103158398  0.74405382 -1.13402757  1.36874808  2.000033964
##  [79,]           NA          NA -1.24739184 -0.92566991 -0.231962018
##  [80,] -0.915396682  1.05845614          NA  0.07460473           NA
##  [81,]  0.456792345 -1.87179149  1.54804821  0.82366977  1.005418210
##  [82,] -0.476808361          NA -1.03956940 -0.87514453           NA
##  [83,]  1.130685758  0.44606186  0.03880701  0.57610038  0.759181341
##  [84,]           NA -0.53737235  0.09386803  1.01844446  0.891959027
##  [85,]           NA -1.73149773          NA  0.19630049           NA
##  [86,]           NA  0.14870760  0.20474180  1.50411849           NA
##  [87,]  0.777796491  1.87087802  1.19220839          NA -1.045826512
##  [88,] -1.829076808  0.34689026  1.86545152 -0.31073221 -0.025981544
##  [89,]  0.669654068 -0.86202998          NA  0.97739173  1.466905912
##  [90,]           NA  0.02085994 -0.98013333 -0.76020672           NA
##  [91,] -0.799856081 -0.23546135  0.62099425  1.02959105           NA
##  [92,] -0.816385307 -0.76772268          NA  1.94467817  0.925263363
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##  [93,]           NA          NA          NA -0.81185605           NA
##  [94,] -3.279725566  0.17531505          NA  1.55656784 -0.002928912
##  [95,]           NA -0.19721370 -0.48558663          NA           NA
##  [96,]  1.100071076          NA  1.00746493          NA           NA
##  [97,]           NA -0.66684483 -0.49032373  0.74519336           NA
##  [98,]           NA -0.27707148 -0.95732425          NA  0.154793524
##  [99,] -2.613348963          NA  1.14834448 -0.22106881           NA
## [100,]  0.108141554 -1.40435241 -1.36430502  0.02710866  0.103760913
##              [,16]        [,17]       [,18]      [,19]        [,20]       [,21]
##   [1,]  0.40138105           NA -0.64079065         NA           NA  0.22503707
##   [2,]          NA  0.742823699 -0.27661117 -0.6797592           NA          NA
##   [3,]          NA -1.536332024  0.76234143 -2.4935888 -1.222427342 -0.72529697
##   [4,]  0.86275393 -0.330305541 -0.91945364  1.6572623           NA -1.62277549
##   [5,] -2.26929551           NA -1.31711916  0.9579515  1.492828334 -1.39364479
##   [6,]          NA  1.876554499          NA  2.6067023 -0.027329984 -1.80719167
##   [7,]  0.83045682  1.286487681          NA  0.5843483  0.305228300 -2.04098594
##   [8,]          NA           NA  0.08899752 -1.1249143 -0.032628827  0.93432116
##   [9,]  0.39724701           NA          NA  0.9788060           NA          NA
##  [10,]  0.16043721           NA  0.45197706         NA           NA  0.14343156
##  [11,]          NA           NA -0.57936538 -1.6677695  0.271293604  0.27512344
##  [12,] -0.14767262  1.295072950  0.52948322  0.8999942 -0.009174242 -0.06974602
##  [13,]          NA -0.252351931          NA  0.2811087  1.737175368  0.14296072
##  [14,] -0.03535783 -1.363968263  0.07962415  0.5126413           NA  0.52344768
##  [15,] -0.09452799 -1.304588909          NA -0.3895997           NA -0.66014677
##  [16,]          NA -0.850957807 -1.65057837         NA  0.031633523  0.59219410
##  [17,] -1.50119268           NA          NA -0.7798902 -0.412915455          NA
##  [18,] -0.51754358           NA          NA  0.5543847 -0.368598787 -0.21757745
##  [19,] -0.16150318           NA  0.17410764  1.2005610 -0.226469920 -0.34861075
##  [20,]  0.37276565           NA          NA  0.3809890  0.250809139  0.38809127
##  [21,]          NA  0.250503788  0.92492207  1.5284269 -1.195036922 -0.34139566
##  [22,]  0.80773049 -0.911253817          NA  0.4407328           NA -1.22944151
##  [23,]  2.03454033 -0.158201001 -0.01967496  0.3355884 -1.213087047 -0.57367675
##  [24,]          NA           NA -0.41850290         NA -0.392738663          NA
##  [25,]          NA           NA  0.45392249 -1.2395728           NA -1.60522855
##  [26,] -0.51489529  1.531895692          NA -0.1340756 -1.482770200  2.22021243
##  [27,]  0.12059170 -1.690441536  0.26251613  0.3572390           NA  0.06046159
##  [28,] -0.73469430  0.229126875 -0.58690465         NA           NA -0.92236518
##  [29,]  1.06966856  0.127951826  0.53878958  0.4268761  0.201405610  1.51302537
##  [30,]  0.37800429 -0.690662308          NA -0.7668176 -0.944930249  1.11561421
##  [31,]  1.69898277  0.318721673 -0.33668883  1.1501052           NA -0.71136766
##  [32,]          NA -0.107871614          NA  1.1085775 -0.476822626          NA
##  [33,] -1.40606890           NA          NA  1.5113787 -0.165954763          NA
##  [34,] -0.80002839           NA -1.28314603  0.2185615 -0.566633677  0.55724144
##  [35,] -0.84501361           NA -1.04735669 -0.8532678 -0.462963973          NA
##  [36,] -1.24056320           NA  1.31880636 -1.5112155           NA  0.50698327
##  [37,]          NA -1.061363239 -0.25312325         NA -0.167684976 -1.90775449
##  [38,] -1.48593091  0.261969242  0.03447377         NA -0.888953189 -0.96552769
##  [39,] -1.68503425  0.407025890  0.93155233 -0.2803568 -1.137416060          NA
##  [40,]  1.07180935  0.298194361 -0.06308928  0.7278359           NA          NA
##  [41,]          NA -0.743302508          NA  0.1229819 -0.432733686 -0.13511058
##  [42,] -1.29697952           NA  0.44797875         NA  0.094641018          NA
##  [43,]  0.61967788           NA -1.08855271         NA           NA          NA
##  [44,] -0.38496997           NA -2.16419259 -0.5675899  0.615368393 -2.19742655
##  [45,] -0.13843634 -0.153949599  0.01118042  0.3479595  1.015817457          NA
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##  [46,] -0.94034074  1.104256572  0.21476061  0.1301298  1.354097072  0.22023810
##  [47,]  0.86729136  2.029296119 -0.50707187 -1.3093075           NA  1.23159357
##  [48,]          NA -0.916606379 -0.65524993 -1.5181565  1.567940067 -2.85121131
##  [49,]          NA           NA          NA         NA           NA  0.12359625
##  [50,]          NA -0.958482386  1.21652250 -1.7059619 -0.179571149 -0.46587435
##  [51,]          NA  0.682639576 -1.29662792         NA  0.853434723 -0.63468059
##  [52,]  0.38469471 -0.007942688          NA         NA -0.288728132          NA
##  [53,] -0.13590930  0.316239949 -2.01972273 -0.5967614  1.718357375          NA
##  [54,] -0.17525751           NA  1.72911854         NA -2.115073284  0.40797613
##  [55,]          NA  0.016438309          NA -0.6115643  1.481561041  2.60243100
##  [56,] -0.67443440 -0.650588093 -0.37834501         NA -0.065671867 -0.05500356
##  [57,] -1.57447446           NA -0.31411543         NA  1.445470139          NA
##  [58,] -1.10432322 -0.915640052 -0.52974444 -1.3101980           NA -0.64097807
##  [59,] -1.14605152 -0.956933565  0.65849999  0.4917632           NA  0.48033928
##  [60,]          NA           NA          NA         NA           NA          NA
##  [61,] -1.53964590           NA  0.78032565  0.7277186 -0.918419723  0.49532017
##  [62,]          NA  0.644745288          NA         NA  0.576824448  0.19469204
##  [63,] -1.84973300           NA          NA -0.1410245 -0.257141722 -0.55647498
##  [64,]  0.61939692 -1.662161039          NA         NA  0.184152497 -0.72948124
##  [65,]  0.27385193  0.872568811          NA  0.4289595 -0.194415982 -0.11671149
##  [66,] -1.09264145           NA  2.76373341  1.8799975  0.458226093 -1.13880698
##  [67,] -0.19809089  0.983782747          NA -1.4371386  0.951804361 -0.86091257
##  [68,]          NA           NA  0.11984357 -0.3699327 -1.230329140  0.71535131
##  [69,] -0.86558904           NA          NA  0.3513479 -0.059706425  0.33080415
##  [70,] -2.54037150 -0.184193836  1.64914303         NA  0.431079972  1.12554098
##  [71,]  0.51994562  0.261798108 -1.23461445 -0.1155286 -0.128740991  1.09513278
##  [72,] -0.54130853           NA          NA  0.8758361           NA  0.10481736
##  [73,] -0.29810814  0.177771256          NA         NA -0.169420945          NA
##  [74,]          NA           NA  0.93514209         NA -1.704377801 -0.70463225
##  [75,]  1.85502691           NA  0.06672959         NA  1.758507055          NA
##  [76,] -0.11212237  0.758224036          NA -0.7591005  0.084817339  0.94595292
##  [77,]  0.74610627  1.354748483 -0.43986803         NA -0.834053309 -0.93110940
##  [78,]  0.10659251 -0.768443172  0.85736974  0.1368217  0.250050880  0.49562745
##  [79,]          NA  0.084011401 -0.06524469         NA           NA -0.52196893
##  [80,]          NA           NA -1.32845155         NA -0.300053520 -0.26351383
##  [81,]  0.17840147  0.782619233  1.22781125         NA           NA  1.26732697
##  [82,] -0.89095824           NA -0.96532571  0.4184062           NA  0.55513228
##  [83,] -0.72232407  0.117130038 -1.65709582         NA -1.728226471 -2.12644452
##  [84,]  0.37554051  2.025063911  1.19080043  0.8724225           NA          NA
##  [85,] -1.63501825  0.354150566          NA  1.1943828  0.745577685 -0.36949181
##  [86,]  0.90971706  1.165372943          NA         NA -0.435649415          NA
##  [87,]  0.45490458           NA          NA         NA  1.263419395  1.10856105
##  [88,]  0.46990339  1.271608912  0.24476416 -0.5574450 -0.287162457  0.54735661
##  [89,] -0.69230712           NA -0.71137193         NA  0.380513571 -1.39137168
##  [90,]  0.64912301           NA -2.12026837         NA -0.218274451          NA
##  [91,] -0.66641933           NA          NA  1.3931538  0.268140204  0.06755220
##  [92,]  0.19327744           NA -0.44450850         NA           NA -0.08817854
##  [93,] -0.05955108  1.108021297          NA         NA  0.817921788 -0.22120120
##  [94,]          NA           NA -1.01971446  0.9991517 -0.630263274  1.19835428
##  [95,]  0.02450252           NA  0.38945097  1.1395730           NA  2.82748572
##  [96,]          NA           NA -0.49716717 -0.8784674           NA          NA
##  [97,]  0.10476089           NA  0.47301535         NA -0.508447365 -0.62161505
##  [98,] -0.45378613           NA          NA         NA           NA          NA
##  [99,]  1.04016232 -0.257383789 -0.05229754         NA -0.378276388 -2.45332511
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## [100,]          NA  1.131282325 -0.90170475         NA           NA  0.31243181
##               [,22]        [,23]        [,24]       [,25]       [,26]
##   [1,]  0.264762778           NA  1.067299517  1.88432343  0.65625161
##   [2,]  0.303302643 -0.34209639           NA  0.51288940  0.49316895
##   [3,]  0.932212258           NA  0.687202381  2.00934535  1.73614526
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##   [5,]           NA           NA           NA -0.82444225          NA
##   [6,]           NA -0.35195088           NA -0.15993773          NA
##   [7,]           NA           NA  1.695671922          NA          NA
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##   [9,] -0.154417861           NA -0.378139477 -0.63563917  0.79959526
##  [10,]           NA -1.62168145           NA          NA  0.28063725
##  [11,] -1.523585921           NA  2.456564895  1.74820342  0.12902176
##  [12,]           NA  0.67849564  1.723572734 -0.86457011 -1.19180436
##  [13,]           NA           NA -0.382438044          NA  0.03083857
##  [14,] -0.529071047 -0.18037819  0.264240808 -0.71884280 -0.54357932
##  [15,] -0.703389297  0.95387558           NA -0.24507925  1.23609097
##  [16,]  1.915168687 -0.85954749           NA -0.99187331 -0.94231774
##  [17,] -1.309227422  0.29272250  0.713843080  1.09638670 -2.40923578
##  [18,] -0.018988930  0.13399419           NA  1.68288749          NA
##  [19,]           NA           NA -1.861811677 -0.76659646 -0.34556455
##  [20,] -0.079559963 -0.93583931 -1.207777809  0.76581121 -0.61871738
##  [21,]  0.555435397 -0.36599735  1.335266291          NA  0.11764107
##  [22,] -0.877566568 -1.04849965  0.435047249  0.68519361  0.29932479
##  [23,]           NA  0.48326085           NA -0.02434805          NA
##  [24,] -0.929797142           NA -1.380469496 -0.61827124  0.28859888
##  [25,] -0.201031982 -1.48667611  0.982410843 -0.04685714          NA
##  [26,]  0.813472518           NA  0.348743579 -0.64869340          NA
##  [27,] -0.468245485           NA  0.196154936          NA  1.62800637
##  [28,]           NA  0.29262513           NA          NA          NA
##  [29,]  0.904945844           NA -0.473168659 -1.25316049 -0.95790821
##  [30,]  0.148337682           NA  1.491234207 -0.65173229 -0.61684502
##  [31,]  0.231405061           NA -0.236109686  0.14928597  1.49817073
##  [32,]  0.321582768           NA -2.256338314          NA          NA
##  [33,]  1.259528584 -0.96789231 -0.691175810          NA          NA
##  [34,]  0.342294954 -0.41067363  0.109954878 -1.80818190 -0.30068125
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##  [36,]           NA           NA  0.591214257          NA -1.06825052
##  [37,]           NA  0.73116871  1.015194847 -1.58105308 -0.25653961
##  [38,]  0.446455703  2.51733119 -1.139586888 -1.33956708  0.66621361
##  [39,] -0.988059340           NA           NA          NA  1.57267288
##  [40,]  0.150055771 -0.47867954 -0.344257478  1.63795737  0.36284220
##  [41,]  1.677102634 -0.73853362  0.182169225          NA          NA
##  [42,]  0.157646298           NA  0.214021683  0.76854199  0.99480986
##  [43,]           NA  0.78091811           NA          NA -2.01989357
##  [44,] -0.757499921  0.88921231 -0.426697342          NA -0.18361998
##  [45,] -0.832075414 -0.86967954 -0.880550166  0.86499882 -0.25366921
##  [46,]           NA           NA           NA  1.63443738          NA
##  [47,] -0.235842862  0.62079677           NA          NA -0.46366853
##  [48,]  0.273809547 -0.64624139 -0.085537261  0.61253635          NA
##  [49,] -1.593558667           NA -0.426865858  0.23035353  3.18510040
##  [50,]           NA  2.40682877           NA  1.22110615  0.34465934
##  [51,] -1.503043033           NA  0.794561986  1.55601537  0.22615621
##  [52,]  0.272788962           NA -0.447935895 -1.37686590 -0.79908211
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##  [53,] -0.811836194 -0.68030297           NA          NA          NA
##  [54,]           NA -1.33093187 -0.001930314  0.50674589  0.43455110
##  [55,]           NA  0.75790386  0.241347555 -0.67290674 -1.20248321
##  [56,] -0.687313061          NA -0.627948343 -0.01578708  0.95626759
##  [57,]           NA  1.01270814 -0.696296829          NA -1.07959067
##  [58,] -0.207470483 -0.33782388  0.745222174          NA          NA
##  [59,]  0.001216726  1.29421195           NA  1.39936009  1.20418668
##  [60,] -0.930283645 -0.20111741 -1.025334521          NA  0.24598466
##  [61,] -1.752404563 -0.06078930  0.745879517  0.81259055 -1.05390959
##  [62,]  0.405414092          NA  2.518102773  0.66487833  0.12406697
##  [63,]  0.115848137  2.17497149           NA -0.23902597  1.59604255
##  [64,] -0.511496188 -1.17211832  0.357984245  0.10745252 -0.38671642
##  [65,]           NA          NA           NA -0.58318024          NA
##  [66,]  0.085052861          NA           NA          NA -1.28071486
##  [67,] -1.062166382          NA -0.578487344 -0.75750169 -0.79572766
##  [68,]  0.692835246          NA  0.400050024  0.08285130 -0.00644874
##  [69,]  0.911753264 -1.41569997  1.140573659  0.57854350          NA
##  [70,]           NA -0.26218374 -0.974587157          NA  1.22915971
##  [71,]  1.325035891          NA -0.434038418  0.04804784          NA
##  [72,]  0.395235638          NA -0.684996410          NA  2.36768138
##  [73,]           NA  0.65517178 -1.260218217          NA          NA
##  [74,]  0.088743551  0.69596809  1.507956611  0.91283239 -1.46871561
##  [75,]           NA -0.50335482  1.191185995  0.76707842          NA
##  [76,]  0.321186716  0.33568655  0.756754104          NA  1.82443068
##  [77,]           NA -0.21640082           NA          NA          NA
##  [78,]  0.581378142 -0.54048213  0.205945432  0.54595807  0.22455279
##  [79,]  0.705573291  0.13322236 -1.239428706 -0.54118999          NA
##  [80,]  0.916832615          NA -2.409675679 -0.48356658 -1.75676480
##  [81,] -0.379329540  0.59751728           NA          NA -0.63108163
##  [82,]           NA          NA -1.326811392 -0.43546964          NA
##  [83,]           NA          NA -0.621969315  0.53733431          NA
##  [84,]           NA          NA           NA  0.07659096 -1.01230283
##  [85,]           NA  0.94426140           NA  0.52166669          NA
##  [86,]           NA          NA -1.413572180          NA -0.48300389
##  [87,]  0.859839727 -1.08932573           NA -0.68714157          NA
##  [88,]           NA -0.76766586           NA          NA  0.49693707
##  [89,]  2.016114075          NA           NA -1.82814470          NA
##  [90,]  1.082813464  1.05783603  0.625021421 -2.73809417  0.46320239
##  [91,] -1.376684465 -1.10100357           NA          NA  0.04779830
##  [92,]           NA -1.21700617           NA -0.48530644          NA
##  [93,]           NA -0.82105236           NA          NA -0.42188972
##  [94,]  2.328747250          NA -0.038466885 -0.59349667 -0.12515680
##  [95,]           NA -0.03165016           NA  0.64039846  0.55892987
##  [96,] -0.730938479 -0.05276838           NA  0.02909048  2.11044549
##  [97,]           NA  0.86258986           NA  1.37990378  2.39472533
##  [98,]  0.130178557  0.31602388 -0.764660712 -1.10689180 -0.10707986
##  [99,]  0.367778442 -0.15961881           NA          NA -0.03002735
## [100,] -0.258742498 -0.21660507 -0.120286786  0.25078314 -1.23225611
##              [,27]       [,28]        [,29]       [,30]       [,31]
##   [1,]  1.553171305  0.06653454 -2.028065553  0.43120921  0.31450283
##   [2,]  1.070166171 -0.61704787           NA  2.88075609 -0.96799762
##   [3,] -0.399087613 -1.43493105  1.683125327  1.88742886 -1.37993778
##   [4,] -0.466074592 -0.81649259 -0.492564274  1.77120678 -0.25874902
##   [5,]           NA  1.42768507 -0.205982609 -0.64673451 -0.27100005
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##   [6,]  0.892568977 -0.19173600          NA  1.18370235  0.69416519
##   [7,]  0.273185262  0.21656802  0.822255037 -1.38257644  0.94901189
##   [8,] -0.955329125  0.75625430  1.067994063          NA  1.98606534
##   [9,]          NA -0.21269478  1.131027526          NA          NA
##  [10,]  1.177682270 -1.69393556  0.626043342  0.81663635 -1.30342537
##  [11,]  0.497476923 -1.70205662          NA          NA  0.68432473
##  [12,]          NA          NA  0.925661041 -0.14470067  0.30550002
##  [13,]  0.683689372  2.87686742  0.083294472  0.26785033  0.58738896
##  [14,]          NA          NA -1.106710346 -0.36379517  1.31091238
##  [15,]          NA  0.02421634 -0.514946047 -0.65502948 -1.86189237
##  [16,] -0.012485281          NA          NA          NA  0.45211863
##  [17,]  1.508656817  0.42951277          NA  0.15841108  1.72686744
##  [18,]  0.129769939 -0.20833433          NA  1.07098175 -0.47656316
##  [19,]  1.524295731 -0.26873173  1.157532434 -0.81969674  0.49347938
##  [20,]  0.452815173  0.26604531 -0.937886369  0.36601314  1.42703974
##  [21,]  0.723823631          NA -0.200935150  0.33717775  0.29647750
##  [22,] -1.798137610  1.49517542          NA -2.05346405 -0.08716115
##  [23,]          NA          NA -0.436443836 -0.81514767  0.56083482
##  [24,]          NA -1.25813677          NA  0.21079912 -0.31896267
##  [25,]          NA  0.92946259  1.169520091          NA -1.23870060
##  [26,] -1.494836068 -1.99851611  2.260041068  0.57787087          NA
##  [27,]  1.022405869 -1.16666389  0.209680613  1.08995659 -1.46227814
##  [28,] -0.263857778  0.16017186  0.017034568          NA -1.75792628
##  [29,] -2.022676930 -0.89769664 -0.258241373  0.05709690          NA
##  [30,]  1.269432025          NA          NA -0.16278311 -0.18483504
##  [31,]          NA  0.52751515 -0.288128619          NA  0.60853715
##  [32,]  2.449102294  1.45150437          NA          NA -0.99867818
##  [33,]          NA  0.62025861  0.026868899 -0.73368588  0.04295474
##  [34,]          NA          NA -0.252250958 -0.64502781          NA
##  [35,]  0.565212064          NA -0.968632125 -1.29270633          NA
##  [36,]  0.725707834 -0.57832479          NA -1.38086180 -0.06808420
##  [37,] -0.913418772  2.41962857          NA          NA          NA
##  [38,] -0.197091235 -0.73731512  0.202267840  1.06201701 -0.48135962
##  [39,]          NA  1.93801480  1.381742506          NA -0.99077520
##  [40,]  2.236365827          NA -1.754358413 -0.58594205  0.25948791
##  [41,]          NA -0.59988685 -0.832836519 -0.76134365          NA
##  [42,] -1.272238322 -2.40001740 -0.696976100  0.50638743 -1.26296553
##  [43,]  0.055770136  1.14245568  0.265045243          NA  1.17413557
##  [44,]          NA          NA  0.509055281  2.70140223 -2.09574014
##  [45,]  0.233557539          NA          NA          NA          NA
##  [46,] -4.240691328  0.10375112  1.878520771          NA          NA
##  [47,]  0.166374065  0.23000378  0.099704328  0.83143602 -0.13504238
##  [48,]  0.860006011 -0.25776510          NA          NA          NA
##  [49,] -0.926727108  0.27866632  0.812447874  0.50210863 -0.02583646
##  [50,]  0.087392833  0.44328180 -1.518206759 -1.06719620 -0.27340972
##  [51,]  0.015732761 -0.02043039          NA          NA  2.46069219
##  [52,] -1.036915609          NA  0.734350610 -1.65608133          NA
##  [53,] -0.739740083  0.79996294 -0.929249183 -0.33029839 -1.53947628
##  [54,]          NA  0.12035547          NA -0.49620104          NA
##  [55,]  1.280028291          NA          NA          NA          NA
##  [56,] -1.202840360          NA  0.058584218  0.74426821  0.65401400
##  [57,]  1.905252917 -0.22949556          NA  0.50805859 -0.84583687
##  [58,] -1.353321374  0.39734235 -1.742111254  0.19399252 -0.90487968
##  [59,]  0.046409204          NA -1.543843635          NA  0.19647925
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##  [60,] -0.610206410          NA  0.449846697          NA          NA
##  [61,] -1.718733596  1.64301002  1.135413921  1.16757563          NA
##  [62,] -0.292106673 -0.64313938 -0.410519250 -0.34488288 -0.27812749
##  [63,]  0.441241174          NA -2.902908542  0.19003186 -0.14848090
##  [64,]  0.607425675  1.17023083          NA  0.96393091          NA
##  [65,]          NA  1.02826658          NA  0.03208510          NA
##  [66,] -0.691107049 -1.27573818          NA -0.44586102 -0.16065692
##  [67,]  1.219842442 -1.13225480 -0.472528939          NA  0.92984691
##  [68,] -0.233937428  0.72346631  0.474721089          NA          NA
##  [69,] -0.768425828          NA  0.358874509          NA -1.99492003
##  [70,]          NA  0.03291717  0.318889857  0.19795469  2.08784956
##  [71,]  1.699456831  1.63023893          NA  2.03006400 -0.33596850
##  [72,]  0.856314440 -1.05223745          NA          NA          NA
##  [73,] -0.214824442  0.46917364          NA          NA          NA
##  [74,]  1.400663680 -3.54930611 -1.246204259          NA          NA
##  [75,] -0.010182883 -0.08877892 -0.575820036  0.94091514 -1.11589390
##  [76,]          NA  2.25646725 -0.140310548 -0.46867591          NA
##  [77,]  0.148242215          NA          NA  0.72872999  0.65661062
##  [78,]          NA  0.52417587 -0.647831004 -1.08012039  1.96230535
##  [79,]          NA  0.61296935          NA -2.58094628  0.74012330
##  [80,]  1.164097211 -0.28432122  0.890043823 -0.74112354 -1.89983307
##  [81,]  0.229223571          NA  0.002078771          NA  1.04384204
##  [82,] -0.002294502 -0.21967067  0.157819067  1.48859733          NA
##  [83,] -0.717781669          NA -0.548973971          NA -0.54992412
##  [84,] -0.919089227  1.94418456          NA -0.38210929 -1.60948158
##  [85,]          NA  0.05745569 -0.536427918  0.09087198 -0.70875457
##  [86,]  0.872956957 -0.25403267          NA  0.35639923  1.93055322
##  [87,] -0.992134542 -1.87654640 -0.673301494          NA  2.28144381
##  [88,]          NA -0.81198576          NA          NA          NA
##  [89,] -0.215554413  1.38972493 -1.000678826 -0.18442809  1.37947322
##  [90,] -1.137846177 -1.02354226 -1.427828385          NA  0.48571809
##  [91,] -0.710309952          NA          NA -0.08707686          NA
##  [92,]          NA          NA          NA -1.21526405 -0.59043265
##  [93,] -0.883878838          NA          NA -0.12450114 -0.30119513
##  [94,] -1.125808242 -0.09352843 -1.267657712  0.14027839  1.08031985
##  [95,]  1.070855921  1.27226528          NA -0.28674883 -1.62498624
##  [96,]  0.584799472 -0.08845753  1.679461381          NA -0.47321139
##  [97,]  0.330066058          NA  0.032400118          NA -1.85069150
##  [98,] -0.027557976  1.02244991          NA  0.32344041  0.08293861
##  [99,]  1.143127821  0.64471283          NA          NA  0.26447000
## [100,]  0.757138413          NA  0.309697074 -0.11379501          NA
##              [,32]       [,33]        [,34]       [,35]       [,36]        [,37]
##   [1,] -0.66103061 -0.05400244 -0.264446203 -0.09860430  1.18226746          NA
##   [2,]          NA -0.79365232  0.780895716  0.01860067  0.39114414          NA
##   [3,]          NA          NA  0.422853289 -1.14360548 -0.44538565          NA
##   [4,]          NA          NA  0.668549082 -0.02088800 -0.86500867 -0.62009386
##   [5,] -0.03004885  0.19352946          NA  0.67334457  0.73237954 -0.25305717
##   [6,]  0.02775823 -0.42101900          NA  2.50611362  0.99984803          NA
##   [7,] -0.18298130 -1.23743788  1.757111247 -1.08128379 -0.01428679  1.09096989
##   [8,] -0.27985263          NA          NA -2.06098533          NA -2.18917989
##   [9,] -0.83589896          NA  0.785101536          NA          NA          NA
##  [10,] -0.30185592          NA          NA  3.60252107          NA  2.13359280
##  [11,]          NA          NA  1.441604703 -1.28305557  0.85604593          NA
##  [12,]  0.68865400          NA          NA -0.34759687  0.12060930 -1.11573287
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##  [13,]  0.82151176  0.51460332 -0.279610378 -0.73237568          NA -0.04002409
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##  [15,]          NA  1.42614890  0.167797432 -0.64577637          NA          NA
##  [16,]  0.08079771  0.25866728  1.852272076          NA  0.88146390 -0.09907483
##  [17,]  1.39473035 -0.54848428           NA -0.22865407          NA -0.79909492
##  [18,]  1.39552592          NA  0.346564480  0.83981789  0.80747992          NA
##  [19,] -1.80202762  0.41959668 -1.318446401          NA -0.30532133  1.94970564
##  [20,]  0.56024283 -1.38109428 -0.002624604          NA  1.36874521 -1.24802888
##  [21,] -1.47522925          NA -0.049440510          NA          NA  1.45349520
##  [22,]  0.57389635 -1.11064518 -0.232530047          NA -0.41304289 -1.12443119
##  [23,]  1.93851312 -0.95592437 -0.188673965  1.22890509  0.03138410 -0.15017957
##  [24,] -0.83823486          NA  0.262428282 -1.26089727  0.41832418  1.70904030
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##  [26,] -0.13487651          NA  0.954600582          NA  0.33096593 -0.45675300
##  [27,] -0.82165073 -1.02993185 -0.138712815  0.78419934  0.98949398 -0.26868850
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##  [31,] -1.06934066 -0.63325400           NA -0.70670224  1.57614037  0.49131265
##  [32,] -0.55481019  1.36431761 -0.606144937          NA -0.05665933          NA
##  [33,]          NA -0.33185147  1.736287789          NA  0.23248657 -0.64548737
##  [34,]          NA -0.85159149 -1.523031639 -0.38662877 -0.93242794 -0.19349379
##  [35,] -2.29967227  1.02878883  0.204505854  0.34125052 -1.81969414          NA
##  [36,] -1.28809709  0.82128341 -1.936237909 -0.31767619  0.77426970 -0.15396047
##  [37,]  0.22729473          NA -1.562896721          NA -0.47608460 -1.43593447
##  [38,] -1.45556644          NA -0.503209621  0.21097058  0.34917162          NA
##  [39,] -0.55549753  0.26784277 -2.201206947 -0.51810963  0.39880324  0.32834859
##  [40,]          NA  0.48468167           NA  0.11752465 -1.02432168  0.38118591
##  [41,]          NA  0.60457425  0.185880060  0.18100221          NA          NA
##  [42,] -2.28935143 -1.56278973 -0.871397642  0.03462273 -0.77653856 -0.63145467
##  [43,]  0.80972201          NA           NA  1.69323927 -1.12055023 -0.34267822
##  [44,]  0.11949708 -0.71327961  1.748352302 -0.36449138  0.91288750          NA
##  [45,]          NA  0.83610135  0.448617712 -0.57831027          NA -0.51940597
##  [46,] -0.97237621  0.48729703  0.355168569  0.15283093          NA -0.20330845
##  [47,] -0.51751039          NA -1.063270362 -0.50375896 -1.41635859  1.04698402
##  [48,]  1.65671290          NA -0.417436407  1.50711563  0.80618974          NA
##  [49,]          NA -0.19787466  0.064004751  0.77095246  1.00795287  0.04034108
##  [50,] -0.32131975  0.78633024 -0.247673021          NA -0.46119974 -0.34179216
##  [51,]          NA  1.05265739  1.395474049          NA  0.51974178  0.85371828
##  [52,] -0.12997969 -0.69641749  0.757594220          NA -0.39166066 -0.52724336
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##  [54,]  0.18926827  1.28647527           NA -0.13892415 -1.23280011  1.24719909
##  [55,] -0.69714274  0.24610359  0.439140895 -0.36886021 -0.39165789 -0.01270106
##  [56,]          NA -0.72989073 -0.260694861 -0.75125920          NA  0.60699574
##  [57,]  0.77974519 -0.57093983  1.810764137          NA          NA  0.05912951
##  [58,]          NA  1.92052318  0.556489887  0.44781477          NA -0.69403818
##  [59,]  0.22674870 -1.73058354 -1.987357429          NA          NA -0.14644435
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##  [61,]  0.59268407  0.52310655  0.642229803          NA  0.69926167  0.62154274
##  [62,]          NA -1.16220861           NA  0.10866977          NA  0.96747649
##  [63,]          NA -0.23820051 -0.309807072 -0.11158281 -1.48375896          NA
##  [64,]          NA -1.27539294  1.845548000 -0.71246567 -1.58306005 -2.34215221
##  [65,] -0.33710377 -0.86302805 -0.854610348  0.66801771 -1.51897792  0.03458347
##  [66,] -0.33730020 -1.66283442  0.088243122  1.33611082          NA -0.69249638
```

```
##  [67,]  0.40928172          NA           NA -0.03452414 -0.52076280  1.06387755
##  [68,]          NA          NA -0.270148293 -0.50888927  0.35332911 -1.77143188
##  [69,]          NA  0.58746231           NA          NA -0.72899338          NA
##  [70,] -2.61434554 -0.04650345  0.336997209 -0.95682938          NA  0.22188590
##  [71,] -0.03896739  0.02172098 -0.904138982 -0.03927841  0.45295007  1.45592925
##  [72,]          NA -0.15200862 -1.080533984 -1.37688101 -0.84672726          NA
##  [73,]          NA          NA -0.042631132  1.70817023  1.56079938          NA
##  [74,]          NA  0.97218835 -1.406271911 -0.10092638  0.10220411 -1.22306283
##  [75,]          NA  0.27985161 -0.845599284          NA  1.21617782  2.91633394
##  [76,] -0.49356135          NA           NA -0.04460820 -1.08540205 -0.82212674
##  [77,]          NA          NA           NA -0.44141006 -0.99375635 -3.52058334
##  [78,]  0.86307542          NA -0.012967067          NA          NA -0.61093825
##  [79,]          NA          NA  1.234576976          NA -0.23903802 -0.79036649
##  [80,] -0.41317116          NA           NA          NA -0.10379534  0.81935023
##  [81,]          NA -0.69657049  0.882826948 -0.55575991 -2.01842624  2.26159464
##  [82,]  0.97377150  0.32782860  0.208972058  0.74857311          NA  2.90354020
##  [83,] -2.61973464  0.36308819 -0.635483703          NA -0.88653088  0.12817829
##  [84,] -2.01135914 -0.23940774           NA  0.48873424  0.73551853  1.97712242
##  [85,]          NA -0.78600256           NA  0.72949366 -1.47576918          NA
##  [86,]          NA -0.74755656 -1.097666671  0.02263954  0.57522792 -1.86224791
##  [87,]  0.19404648 -0.83023927 -0.812404455 -0.36398631          NA  0.42553581
##  [88,]  1.25239997 -1.02513207           NA  0.69557366 -0.58171230  0.82879943
##  [89,]          NA -0.65255547           NA  0.07623172 -0.74437928 -1.83968744
##  [90,]          NA -0.11567369  2.258992775  0.06275510 -1.12479509 -2.01330077
##  [91,]          NA -0.19000047  0.128485665  0.75863993  0.45895622  0.78636882
##  [92,]          NA  0.31119890  0.004536266          NA -1.64822730          NA
##  [93,]          NA -0.21868978 -0.131155730  1.28880187          NA  1.11987232
##  [94,]  0.48020528  0.08967564 -1.576425025          NA  1.11645664  0.13711987
##  [95,]  0.73888327          NA  0.499505562  0.46495572          NA -0.15774455
##  [96,]  1.65972741 -0.70171383           NA          NA -2.22535474          NA
##  [97,]          NA  1.19664993 -0.205057998  0.22796267          NA  0.19071608
##  [98,]          NA -0.53985963  0.970516850 -0.65680454 -0.10409016 -1.23456985
##  [99,]  0.95257012  0.30668550           NA  0.95430808 -0.24660127  0.49361762
## [100,] -0.65555799  1.21246175 -1.519334500  0.07690333          NA          NA
##               [,38]        [,39]         [,40]       [,41]       [,42]
##   [1,] -0.163564492  0.524592086            NA -0.51821937 -0.71170838
##   [2,]           NA  2.000521102  2.084554e-01          NA  0.22681894
##   [3,]           NA           NA -4.533494e-02          NA          NA
##   [4,] -0.692922693  1.386188338 -1.074093e+00          NA  1.32039062
##   [5,]           NA  1.117863846 -5.458529e-01 -0.70392326 -0.98350442
##   [6,]  0.131317049  0.281725283  7.925518e-02  1.17801942          NA
##   [7,]  0.103130880  0.387811218            NA          NA  0.77265524
##   [8,]  0.076272492  0.222645953            NA  1.69390786 -0.95728619
##   [9,] -0.833590886           NA -1.677051e+00          NA          NA
##  [10,]  0.688583766 -0.290006568 -8.513355e-01  0.43968085          NA
##  [11,] -1.045308190 -2.967963433  6.577041e-01 -1.37752468 -1.14615517
##  [12,] -0.722397240           NA            NA          NA -1.07580240
##  [13,]  2.268340355  2.146321891            NA -0.36355735  0.80928457
##  [14,]           NA -1.213332597 -2.200265e-01  0.62480482          NA
##  [15,] -1.115993963  0.140648135            NA -1.02708789 -0.30088340
##  [16,] -0.547565572           NA -3.222390e-02 -0.94996982 -1.27599095
##  [17,]  0.992710527  1.413793404  2.445255e-01          NA  0.70539446
##  [18,] -0.108559547 -0.454815003            NA          NA          NA
##  [19,]           NA -0.218214734 -1.125249e+00 -0.38025161          NA
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##  [20,]           NA -1.615762630  1.617747e+00          NA -1.18459459
##  [21,] -0.125589369  0.052687643  1.066591e+00  0.97902661          NA
##  [22,] -0.669868739 -2.105507530            NA          NA  0.32404616
##  [23,]           NA -0.991284070            NA  1.07002917 -0.21957019
##  [24,]  0.704776875 -2.513480366 -4.582416e-01          NA          NA
##  [25,]           NA           NA -5.236290e-02          NA -0.48427037
##  [26,]  0.120115355  0.373579554            NA          NA -0.71572314
##  [27,] -0.441247828  0.659528511  1.909048e-01  0.31719058 -1.25582979
##  [28,]  2.239944353 -0.070824877            NA -1.89833101          NA
##  [29,]  0.402061644  0.330251835 -1.333336e+00  0.76239002          NA
##  [30,]  1.658287119 -0.341508289            NA -0.94286896  0.82748485
##  [31,] -0.140076051 -1.496040298  9.764552e-01  0.45485410  0.72489188
##  [32,]           NA  1.519622253            NA -1.12153897 -1.29503987
##  [33,]  0.849106272 -0.966476975            NA -0.14455636  0.92071742
##  [34,]  0.365968896  1.158389159  7.856995e-01          NA          NA
##  [35,] -1.397626295           NA  1.388295e+00 -1.07701631          NA
##  [36,]           NA           NA  1.293856e+00 -0.19577502          NA
##  [37,] -1.472477988  1.549058890            NA -0.86954253 -0.68521110
##  [38,] -1.088429706           NA            NA  0.57639346          NA
##  [39,]  1.135043073           NA -3.056056e-01          NA  1.96051666
##  [40,] -1.779210414           NA -9.363322e-01 -0.84890976  1.06925326
##  [41,]           NA -0.897215522  1.990547e+00 -0.33788125 -0.46627369
##  [42,] -0.565022513  0.590406561 -4.049518e-01          NA  0.94735517
##  [43,] -1.334165537 -0.792986162  1.736087e+00          NA -0.91456716
##  [44,]  0.448039457 -0.155458712            NA  0.69126826 -0.69512851
##  [45,] -0.996886324           NA -9.158479e-01          NA  1.12876778
##  [46,] -0.229238672  0.542895152  6.012614e-02          NA -0.08253335
##  [47,]  0.285732063  0.535814839  1.119835e-01          NA          NA
##  [48,]  0.379839121  0.211979027  6.023059e-01          NA          NA
##  [49,]           NA  1.247562751  1.144459e+00 -1.57022967  0.57038459
##  [50,]  0.847576550  1.380611435            NA          NA  0.06007001
##  [51,] -0.124780231 -1.310468153  4.153014e-01 -0.43930747 -0.83813635
##  [52,]  0.497223606           NA  9.504628e-05 -0.17578359 -0.99542870
##  [53,]           NA -0.297772281 -1.615440e+00  0.02221016          NA
##  [54,] -0.334746763  0.231215385            NA          NA  0.36654413
##  [55,]           NA -0.152732574 -9.408572e-01  0.81496014  1.56772816
##  [56,]           NA  0.385171194 -1.514310e+00  0.75452877  0.52150479
##  [57,] -1.338590785 -0.006492274  1.812110e-01          NA  0.71104038
##  [58,]           NA  0.558686079  1.404750e+00 -0.15174634  0.49331573
##  [59,]           NA           NA -1.202039e+00  0.37599600          NA
##  [60,] -0.552323625 -0.132098363  7.187795e-01  0.51490090  0.61432374
##  [61,]  0.696279768           NA -2.749747e-01 -0.10280796          NA
##  [62,]  0.992856779 -1.142958577  1.171901e-01  0.32768766  0.01538761
##  [63,]  0.580496431 -0.483035086  6.826833e-01 -0.92310030          NA
##  [64,] -0.299408473           NA  2.213726e+00          NA          NA
##  [65,]  1.026450360           NA -6.383614e-01          NA  0.17221025
##  [66,]  1.662975971  0.291372638            NA          NA          NA
##  [67,]  0.543334334           NA  1.285796e-01  0.63256938          NA
##  [68,] -0.365758991 -1.189187460  3.612510e-01          NA  1.02180219
##  [69,] -0.518158649           NA -2.488646e-01  0.73420679 -0.75351032
##  [70,]  0.266283849 -1.122603595  1.460932e+00  1.56870953          NA
##  [71,] -0.336401727           NA  1.096214e+00 -1.56637154  0.28067097
##  [72,] -1.082360625  0.405080726            NA -0.15590147 -1.47752079
##  [73,]  0.588759549  1.277480550 -6.168057e-01 -0.86914722 -0.39330109
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##  [74,] -0.150232009  0.253202905  1.250488e-01          NA  1.95135086
##  [75,]           NA  0.692844036            NA  0.02605278  2.64858949
##  [76,] -1.389833309  2.175779160            NA          NA          NA
##  [77,]           NA -0.023679850 -1.360524e+00  1.07836185          NA
##  [78,]           NA -0.985547671            NA          NA  0.61701947
##  [79,]  0.307828879  1.026331965            NA          NA  0.36408505
##  [80,]           NA  0.847879934            NA          NA  0.46194875
##  [81,] -0.628162240 -1.227803793 -3.895171e-02 -0.03145319          NA
##  [82,]  0.531278624  0.070087583            NA          NA  0.81283468
##  [83,]           NA -1.518330103            NA  2.96803790          NA
##  [84,]  1.677977599  0.347828442            NA -0.68584337 -0.37328424
##  [85,] -1.082059090 -0.720873144  2.060539e+00 -1.25549384 -0.41522234
##  [86,]  0.185908204           NA            NA          NA  0.60533019
##  [87,] -0.476837943 -0.963005944 -7.194513e-01 -0.11165642 -2.32907994
##  [88,]           NA -0.149999375  1.565185e+00 -0.16139169 -0.29271584
##  [89,] -0.789249605  0.700086436            NA  0.72076639          NA
##  [90,]  0.633850952 -0.046979790            NA  1.65035788  0.71513844
##  [91,]  0.959623423  1.319568642 -1.433070e+00  1.33762557          NA
##  [92,]           NA -0.238869843            NA -1.34599573 -1.26841209
##  [93,] -0.036331591  1.426341526  8.552836e-01          NA -0.47186091
##  [94,]  2.424669011 -2.081725733 -1.766073e-01  0.01156473  0.95960251
##  [95,]  1.269095141 -0.459926110 -2.405245e+00 -0.06905456  0.52517200
##  [96,] -0.293651994 -1.980179151            NA -1.48772467          NA
##  [97,]  0.008370972  0.156551703  4.518043e-03 -0.64093052          NA
##  [98,]           NA           NA  6.053490e-01          NA -0.07904505
##  [99,]           NA -1.407442089            NA -0.48717952          NA
## [100,]           NA  0.203809493  4.295139e-01  0.02801697  0.88542241
##              [,43]       [,44]       [,45]       [,46]       [,47]
##   [1,]  1.326066641          NA          NA -0.41737708  1.11565593
##   [2,]  0.910763870          NA          NA  0.31608888  0.79312090
##   [3,] -0.157272419  0.67440428          NA          NA  0.76471447
##   [4,]  0.070921981 -0.31211062 -0.25851692  0.68407961 -0.65967920
##   [5,] -1.377365923          NA  0.69128943          NA -1.05255530
##   [6,] -0.593635218  0.09864118  0.43688297  0.15453884 -0.35797780
##   [7,]           NA -0.71965085  0.95882653 -0.76092991 -0.69871948
##   [8,] -0.200259631  1.37266567 -1.16377761 -0.98619580          NA
##   [9,]  1.278157804          NA -0.62443306  0.35680435 -1.24862519
##  [10,]           NA  0.13306132          NA          NA -0.68263712
##  [11,] -2.269472522  1.56832213          NA  0.34262684 -0.81068792
##  [12,]           NA          NA -1.62326926  0.03827228  0.05101477
##  [13,] -0.329320951          NA -1.49274241          NA  0.92428049
##  [14,] -0.011366715  0.10915728          NA  0.78931999 -0.57489862
##  [15,]           NA -0.89137954  0.54088676  0.21300814 -1.00853386
##  [16,] -0.199673786          NA  0.57563826  0.17632558 -1.06358621
##  [17,] -2.197786259 -1.08443331 -0.64158586  2.26982306  0.44627464
##  [18,]  0.936456776  0.03733897 -0.41782654  0.30997652  0.13357993
##  [19,]  0.459662876  0.39035509  0.04398468  0.85647389          NA
##  [20,] -0.245920327 -0.55889489  0.49078595          NA -0.79986998
##  [21,]           NA -0.77345460          NA  0.27786127 -0.39882150
##  [22,] -1.165713427          NA -0.62480292  0.17847456          NA
##  [23,]           NA          NA  0.18018860 -1.25946827          NA
##  [24,]           NA -0.07786459 -0.30712996 -0.66460917          NA
##  [25,]  0.055145075 -0.80321103  0.08479490          NA -0.62124291
##  [26,]  0.985566193  0.14787589  1.08871880  1.88962490          NA
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##  [27,] -0.552866203 -0.14349355 -0.06271565 -0.82604830          NA
##  [28,]  0.089592307 -0.69880663          NA          NA  0.84271463
##  [29,] -0.067950931          NA -0.79892580          NA          NA
##  [30,]           NA -1.05773780  1.54465503          NA  0.35886414
##  [31,] -0.061738299          NA          NA  1.40150417          NA
##  [32,] -2.336946757  0.39623008 -2.15831993 -1.06282930  0.99648928
##  [33,]  1.742625418  0.54306550 -1.08269921          NA          NA
##  [34,] -1.064172783 -1.08572655 -1.20494312  0.12985632          NA
##  [35,] -0.960538339  0.28060229 -1.82585342          NA  1.58474763
##  [36,]  0.707649066 -0.17041788  0.07118393 -0.27659846  0.26349641
##  [37,]  1.307128910          NA -2.57937330  1.47300778  1.18856914
##  [38,]  0.268268716 -0.08783985 -1.29774415 -1.70023358          NA
##  [39,] -0.685469399  0.12186193 -0.22048785          NA -0.35001181
##  [40,]           NA -1.18049465  0.68188392 -0.58254056 -0.63647944
##  [41,] -0.730248317 -0.34782274  0.10640379  0.91294711 -1.06678040
##  [42,] -1.642669911          NA  0.63197759          NA -1.66285985
##  [43,]  0.453567232          NA -0.47051008 -0.11505612 -1.45597830
##  [44,]  1.175534375  0.74538960  0.38340156 -1.18056710  0.57408476
##  [45,] -0.211973889  0.81071083  0.48464349 -0.11336597  0.78845970
##  [46,]           NA  0.85819847          NA          NA -0.45473767
##  [47,]           NA          NA  0.96250104  2.21086130  1.34204423
##  [48,]           NA  1.12808512          NA          NA  0.26819362
##  [49,]           NA -1.11073639 -0.06311733 -0.63021008          NA
##  [50,]           NA          NA  2.11278978  0.26901842          NA
##  [51,]           NA          NA          NA          NA  0.80521509
##  [52,]           NA          NA          NA          NA  1.05805872
##  [53,] -0.040589419  1.40570836          NA          NA          NA
##  [54,]           NA  1.07438473 -1.37272772  1.38369609  0.96377668
##  [55,] -0.428775677          NA  0.68562249 -1.16595899          NA
##  [56,] -0.696700597 -1.34337316  0.98112625 -0.95246006          NA
##  [57,]  0.694679301  0.01031055 -0.09899187  0.56652335          NA
##  [58,] -0.123318422  0.86495445 -0.19255714 -0.89029343 -0.50134368
##  [59,]  0.260239252 -1.16270408 -1.60851722          NA          NA
##  [60,]  0.055495182  0.87629402  1.67196204 -0.55333273          NA
##  [61,] -1.043658788  0.79393996          NA          NA -0.37016947
##  [62,] -1.884372735          NA  1.39832940          NA  0.60619255
##  [63,]           NA -0.51519171  0.23644817  0.16604020 -1.09184237
##  [64,]           NA          NA -0.06100841 -0.05632159 -0.86502066
##  [65,] -0.354980661  0.24856909          NA  0.46238569          NA
##  [66,]           NA          NA          NA  0.68134760 -0.88794672
##  [67,] -1.128719969 -0.24970944 -1.03900286  0.98983875          NA
##  [68,]           NA  0.46742690  1.75525680 -0.46072780 -0.18140354
##  [69,] -2.018066605          NA  0.46439628  1.89981667 -1.42615728
##  [70,]  0.358913362  1.09984470 -1.08306952 -1.48223909  2.25402006
##  [71,] -0.655981543 -0.30083419 -1.14081831  0.78333775 -0.29774902
##  [72,]           NA -1.07797656 -0.04776086 -0.67013996          NA
##  [73,]           NA  0.90671092  0.48687074          NA  0.63278545
##  [74,]  0.093909813 -0.14784007 -0.52290254  1.19082113 -0.29640732
##  [75,] -0.788775672  0.56920030 -0.28769218  0.01814476          NA
##  [76,]  0.179080626          NA          NA  1.29848558          NA
##  [77,]  0.294967310 -0.91657002          NA          NA  0.92539135
##  [78,] -0.483568953 -1.64865592          NA -0.49030703  0.33215438
##  [79,]  0.005082067  1.91778592 -0.24374555          NA  0.42663787
##  [80,] -0.289803837 -1.65645494          NA  0.48769595 -0.07228188
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##  [81,]  2.095916454          NA -1.02167356  0.86943636 -0.68074206
##  [82,]  0.282008567 -1.58486642 -0.84038475          NA  1.22426571
##  [83,] -0.361671118          NA          NA -0.16739139  1.27129729
##  [84,] -1.842963689 -0.39466160  1.58141216          NA          NA
##  [85,]           NA -1.45382377          NA -0.46909950  0.93079929
##  [86,] -1.309030858          NA  0.23457560          NA -0.23272464
##  [87,]           NA -0.67952847  1.41146233 -0.88809114          NA
##  [88,]  0.140841827          NA -0.44916299  0.60076807          NA
##  [89,]           NA  0.48266423  2.72449490 -0.25165987          NA
##  [90,] -0.513297918          NA -0.47376755          NA          NA
##  [91,]           NA          NA          NA -0.30695167 -1.18829185
##  [92,]           NA          NA          NA  0.62745837 -0.65947142
##  [93,] -0.990019956          NA          NA -0.22405569 -1.05950236
##  [94,] -1.172732261 -1.93909857          NA  0.20967600  0.77625984
##  [95,]           NA  0.80678717          NA  1.53668410  1.30211690
##  [96,] -0.823108256  0.12538545          NA          NA  0.42037187
##  [97,]  1.361995536          NA -0.95467170          NA          NA
##  [98,]  1.534230776  0.14157833  0.33337592          NA  0.85841472
##  [99,]  1.449722368  0.61018435  0.94751900          NA -1.02935350
## [100,] -0.874121384  2.25383996          NA          NA          NA
##                [,48]        [,49]        [,50]       [,51]         [,52]
##   [1,]            NA -0.064200287  0.633487272 -1.52958563  1.192336e+00
##   [2,]  0.6368799232           NA           NA -0.51453853  1.389970e+00
##   [3,] -0.2637501719  0.608858727           NA          NA            NA
##   [4,]            NA           NA -0.404786356 -0.35375642 -2.222311e-06
##   [5,]            NA           NA           NA          NA -1.468098e+00
##   [6,]  0.1677366141  0.241130120 -0.708052379 -0.47380772            NA
##   [7,] -1.3409090395  0.058176335 -1.881896305  0.53953504            NA
##   [8,]            NA  0.875184980 -0.429260401 -1.11865392            NA
##   [9,] -0.2992137753 -1.702535104           NA -0.36840925  1.164153e+00
##  [10,] -0.8740513708           NA  0.450159268 -0.45058346  1.519772e+00
##  [11,]  0.1355629729  0.436506578  0.730373253  0.20603638            NA
##  [12,] -0.2921061663  1.665399646  0.406316583          NA  1.036984e+00
##  [13,] -0.5284331509 -0.712237394  0.422107119          NA -7.483260e-01
##  [14,] -0.6395027511           NA  1.708083788  0.72829918  1.047322e+00
##  [15,]            NA -1.024215772  1.282827749          NA -7.967420e-01
##  [16,]            NA  0.006016414  0.406490053  0.34918935 -4.238557e-01
##  [17,]            NA  1.301811214           NA -0.62738228  1.932887e+00
##  [18,]            NA -0.437074748 -2.412924947  0.09196366 -1.870569e+00
##  [19,] -0.6187784274 -2.201483851  1.090179273          NA            NA
##  [20,]            NA -1.218703699  0.044798640          NA -5.054040e-01
##  [21,] -1.0825970822  0.899629258           NA  1.14213073  2.642911e+00
##  [22,]  0.0310244847  0.381800164  1.031246311          NA            NA
##  [23,] -0.4709132677  0.965697993           NA  0.14949559            NA
##  [24,]  0.1502548677  0.118705919 -0.478150498 -2.31889078 -9.067389e-01
##  [25,] -0.1545705067           NA           NA          NA -7.937572e-01
##  [26,] -0.1279427014  0.308222090  1.509475339          NA            NA
##  [27,]  1.4482123486  0.217960242  0.390999792          NA -1.566136e+00
##  [28,] -0.3511935161           NA  0.150600340  1.78191759  3.128482e-01
##  [29,]            NA  1.608185586  0.075702644  1.31414296 -2.994394e-01
##  [30,]  0.7576678205  0.595387451  0.262273191 -0.11177009 -4.978380e-01
##  [31,] -1.3209836924 -1.943036351 -0.035127792 -1.53666327  9.479316e-01
##  [32,] -1.4874832331  0.774935143  0.114728020 -0.45683940 -9.773792e-01
##  [33,]  0.6166413369  0.419324984           NA  0.49856581 -7.795159e-01
```

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##  [34,] -0.4015105793 -1.058640882  0.007185579 -0.05270873  1.033453e+00
##  [35,]  0.3271268946 -0.137080254  1.187565040          NA            NA
##  [36,] -0.3972759745 -0.209699850  1.698024375  0.87418144 -1.092477e+00
##  [37,]  1.2237419067  0.328718755 -0.221354626  0.03554706            NA
##  [38,] -0.0004230341           NA  1.233164237          NA            NA
##  [39,]            NA -0.252982391  0.074138799  0.80421680            NA
##  [40,] -0.3682871474           NA  1.111162605          NA            NA
##  [41,]            NA  1.032534263           NA          NA  2.700686e-02
##  [42,]            NA  0.341497305  2.411995669  1.13599593            NA
##  [43,]            NA -0.402482395           NA          NA  6.423815e-01
##  [44,]  0.1543603773 -0.549865918 -0.863726570 -0.10948437 -5.945789e-02
##  [45,]            NA  1.172545846 -0.558869246 -1.17320786  6.497623e-01
##  [46,]  0.2639443036 -1.470367127           NA          NA -3.706285e-01
##  [47,]            NA  1.532203181  0.244822852          NA  8.538266e-01
##  [48,]            NA           NA  1.276052214  1.51128389  1.408731e-01
##  [49,]  1.0207667251           NA -0.970971333          NA  6.137518e-01
##  [50,] -0.4418488877 -1.278358364 -0.442777133  1.27347446            NA
##  [51,]  1.1198096999  2.584816816  4.049515631  0.81961696 -1.112694e-01
##  [52,]            NA           NA  0.286429608          NA  1.476545e+00
##  [53,]            NA -0.828931108  0.542346761          NA -6.600547e-01
##  [54,]            NA -1.757911567  0.407628278 -0.28510797            NA
##  [55,] -1.1386161652           NA -0.196933880          NA -4.115778e-01
##  [56,] -1.1316561920           NA -0.899466918 -0.52112769  1.115785e+00
##  [57,] -0.7471699182           NA  0.501744919 -0.11835498            NA
##  [58,]  0.8094357422  1.736202181 -1.255803805 -0.07949270 -1.470190e+00
##  [59,]  1.2753975109 -0.936040702 -1.339122784          NA  4.783200e-01
##  [60,]            NA           NA -0.068034878 -0.27002025            NA
##  [61,]            NA           NA           NA          NA -3.289380e-01
##  [62,] -1.2381202283 -0.683230105           NA -0.45380874            NA
##  [63,]  0.1056912531  0.931776966 -1.142225398 -0.16145904            NA
##  [64,]            NA           NA  1.797181228 -0.57915020  7.134459e-01
##  [65,]  0.4453285475  1.389715289           NA -0.06875140            NA
##  [66,] -1.1001683357 -1.299669381  0.512209168          NA  4.328558e-01
##  [67,]            NA -0.177981322  0.097568199 -0.39528532            NA
##  [68,] -0.7503405371 -1.756461377  2.614660188  1.97948283 -2.268870e+00
##  [69,] -1.3035640135  1.991145197  0.741048663          NA -9.386512e-01
##  [70,] -1.5593608614           NA           NA -0.77401432  7.707081e-01
##  [71,] -0.9874550307           NA -1.810275625 -1.08069669  5.486159e-01
##  [72,]            NA  0.056067554 -0.575737157 -0.13758396 -1.104867e+00
##  [73,]            NA  1.266808949           NA  0.90944810            NA
##  [74,] -0.1996656130  1.983466169  0.242726668  0.42164776  3.749119e-01
##  [75,]            NA           NA  0.074226536 -2.33201765            NA
##  [76,]  0.3682040636           NA  0.013983986  0.82301027            NA
##  [77,]  1.7414052110 -1.041738435  0.789269681 -1.26541166  2.150469e-01
##  [78,]            NA  0.568549391           NA -2.00861167            NA
##  [79,]            NA -1.711987103           NA -0.11805921 -1.060214e-01
##  [80,] -0.1653700005 -0.043332721           NA          NA -6.929795e-01
##  [81,]  1.3400865071           NA           NA  0.32083307            NA
##  [82,] -0.2237291767 -1.208183636 -0.623128498 -1.35771435  1.056256e+00
##  [83,] -0.8403290182 -1.692937252 -1.442323316  0.12207437  1.470052e+00
##  [84,] -0.7180189401 -0.169219215 -1.397823393  0.87637749            NA
##  [85,]  1.6127858075  1.138361898 -0.345622579  0.29336733            NA
##  [86,]  0.7920485869           NA  0.440099266 -1.60181835  4.151286e-02
##  [87,]  0.7982196583 -0.185958239  0.131209912  0.22797853            NA
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##  [88,]  1.4854599067  1.675598898           NA  2.81749213           NA
##  [89,] -0.3180312827  0.044034253 -0.025132221  0.31976173  6.462295e-01
##  [90,] -0.7523809744  0.937327407           NA  0.98099558 -1.539127e+00
##  [91,] -0.3979868507           NA  0.352023262 -0.45112020           NA
##  [92,] -0.1692711735           NA           NA  1.22594881           NA
##  [93,]  1.3149462578 -1.288360056           NA -0.66607091  1.448891e+00
##  [94,]            NA           NA -0.349403197 -0.84013086  1.334849e-01
##  [95,] -1.4036310150  0.694909951  0.380601370  2.56348245  2.147639e-01
##  [96,]            NA           NA -0.303159213          NA  2.096815e+00
##  [97,] -0.6051066017  0.972990311           NA -0.66777380           NA
##  [98,]  0.4944908734 -0.294741797           NA -0.43108232  1.163167e+00
##  [99,]  0.1583572780 -1.097498568  0.854548281  0.54924104  7.392676e-01
## [100,]            NA           NA  1.354579574  1.18267709 -8.094778e-01
##              [,53]       [,54]       [,55]       [,56]        [,57]
##   [1,] -1.980038176          NA          NA          NA           NA
##   [2,]           NA  0.93155703  1.40161562  0.31935402  1.545382610
##   [3,] -0.081152287          NA -0.28103434          NA  1.215603298
##   [4,]  0.678278984 -0.16785495  1.91402273 -0.39785381  0.513705679
##   [5,]           NA          NA  0.33116196  0.53899452           NA
##   [6,] -0.176682895 -1.20491556          NA  0.14733987           NA
##   [7,] -0.873382016  0.50410262 -0.58161269  1.56605516 -0.203140386
##   [8,]           NA          NA  0.90174271          NA -2.115162465
##   [9,]  0.521397250  0.09269373 -1.47723005          NA -0.838002700
##  [10,] -0.599261205  1.53239049  1.11806492  0.80109036 -0.010686326
##  [11,]  1.570340490 -0.84160142 -0.04652744  0.18752579           NA
##  [12,]           NA          NA -1.90816308  0.28844823           NA
##  [13,]           NA  0.96201707 -0.22966656          NA  0.553232781
##  [14,]  0.047640116          NA -0.87433694  0.31579031  0.484536333
##  [15,]  1.640923219          NA          NA  1.23475258 -0.587695527
##  [16,]  0.473141702  0.07521808 -0.10983947          NA -0.119992210
##  [17,]  1.647422103          NA          NA -0.63891895  0.050352650
##  [18,]  0.649626854  0.26355731  0.35067270 -0.66920081  0.994320351
##  [19,]  0.310472443 -0.45076006          NA          NA -0.409504670
##  [20,]           NA -0.90166876 -0.38585018          NA  0.759373960
##  [21,]  0.500267156  1.70161278          NA          NA  0.552391014
##  [22,]           NA  1.47228992          NA -0.76987950           NA
##  [23,]           NA  0.48342438          NA          NA  0.495588143
##  [24,]           NA  0.55962459          NA          NA -0.584523403
##  [25,]  0.872146273  0.59293125          NA  0.05526226 -0.410486847
##  [26,] -0.551893824 -0.08514671 -0.10955195 -1.32287892           NA
##  [27,]  0.224454277 -0.38279169 -0.26668332          NA -0.733069969
##  [28,]           NA          NA  1.01937435  0.57872636           NA
##  [29,]  0.124295364 -1.59738789 -0.92202252  0.47725579 -0.399034662
##  [30,]  0.121636666          NA -0.15007013  0.08729964  0.979672436
##  [31,]  0.754079555  1.10766005  0.33210518 -0.53018570  0.390707454
##  [32,]  0.656807253          NA          NA -0.63506930           NA
##  [33,]           NA  1.26266618          NA -0.57187694           NA
##  [34,]  0.551428572 -0.29207932          NA -1.83065689           NA
##  [35,] -0.002433055          NA          NA -0.59043554  0.430391020
##  [36,]           NA  1.43948620 -0.51203917          NA  1.131774124
##  [37,]  0.266506765  3.16262224 -1.44027168          NA  0.882325969
##  [38,]  0.392557825 -0.28390248  0.86662307  1.41044008 -0.283783656
##  [39,] -0.846376299          NA -0.47041483  0.24785274           NA
##  [40,]  0.061199537          NA          NA -0.61099731  0.097861637
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##  [41,]  0.166411658 -0.01394943 -0.15114908 -0.73026394  0.484429394
##  [42,]  0.816033340          NA  0.15395186 -0.07424652 -0.536519615
##  [43,]  0.296546875 -0.15638336  0.29168123 -0.72982132 -3.787525877
##  [44,]  2.464724370          NA -0.56618731  1.69650563           NA
##  [45,]           NA          NA  1.03901554          NA  0.594595808
##  [46,]  2.116766653  1.39934999          NA          NA  0.151501643
##  [47,] -1.334323844  1.54694696 -1.15874227 -0.60407075 -1.239865937
##  [48,]           NA -0.19083655          NA          NA  0.700970029
##  [49,]           NA  0.03000090 -0.58374000  0.89042238           NA
##  [50,]  0.869165636  0.57827651 -2.41720360  0.04289761 -0.142285262
##  [51,] -1.613938961 -0.93467005 -0.25215805  1.50957677  1.029846221
##  [52,]           NA  0.54628119          NA -0.32249863  0.978344443
##  [53,]  0.188235946  0.25035295          NA          NA  0.020882033
##  [54,] -0.990818267          NA  0.33361308  0.62313954           NA
##  [55,]           NA          NA          NA  1.45189516 -0.368407469
##  [56,]           NA  0.75257033  1.11002464  0.25222189  3.645451968
##  [57,]           NA  0.56280931 -0.55777219 -0.84492715           NA
##  [58,]           NA -0.37059958  0.47287744          NA -1.633912473
##  [59,]           NA -0.16444311 -0.21996146  0.63917845  0.170105733
##  [60,] -0.042711151 -1.01461357 -1.11571148          NA  2.419594646
##  [61,] -1.527269118          NA  0.76429511  0.49875454  0.527762057
##  [62,] -0.311514156 -0.07187376 -0.76873905  0.33350185 -0.009843397
##  [63,] -0.473055497  2.78886153 -0.62181825 -0.14640821  0.656023371
##  [64,]  1.257864467 -0.83525252  0.56850260          NA           NA
##  [65,]           NA -0.90297254 -0.85431292          NA  0.233909493
##  [66,] -1.547232434  0.34270534          NA -0.50354773           NA
##  [67,]           NA -0.42933911  1.63587985          NA -0.185205958
##  [68,]           NA  1.31935904 -0.35448134          NA           NA
##  [69,] -0.051669157  0.05449360          NA          NA -0.069797443
##  [70,]           NA  0.94828819 -0.15418407 -0.31750130  0.680049788
##  [71,] -1.269880673          NA  0.48823715 -0.82373138           NA
##  [72,]  1.483274349 -0.28494472          NA  0.81933539           NA
##  [73,]  0.055748120 -0.44585561  1.03464428  0.12559314 -0.088421254
##  [74,] -0.628783799 -0.89384998  0.56456760          NA  0.110656061
##  [75,]  0.775707464          NA -1.75676935          NA -0.876173809
##  [76,]           NA -0.66973196  0.59867671 -0.88311503 -0.197068838
##  [77,] -0.518111054  0.44831115 -0.55832512  2.47443824 -0.598205422
##  [78,] -0.557365993 -0.50901601  0.15309518 -0.40004592           NA
##  [79,] -0.826405154 -0.02655687 -0.92319515  1.23398935           NA
##  [80,]           NA -0.86789397          NA -1.37828382           NA
##  [81,]  0.274678728          NA -1.96789529 -1.21309651 -0.823069349
##  [82,]           NA          NA -0.53165008  0.96165566           NA
##  [83,]           NA  1.22646444  0.04948443  1.77248326  0.567043794
##  [84,] -0.882506546  0.25049848  0.09119107  0.57550299 -1.255448190
##  [85,]  0.918307934 -0.09577127 -0.95968994  0.91751503  0.492258352
##  [86,]           NA -2.52863709 -0.05645134  0.62846614 -0.375554102
##  [87,] -0.272647274 -1.61759245  0.30734694 -1.26812074           NA
##  [88,] -0.373689636          NA          NA          NA  1.890655955
##  [89,]           NA -0.07042424          NA  0.36179987           NA
##  [90,]  0.047006084 -0.77006428          NA  1.31052784  0.558446553
##  [91,]  0.127052933  0.33912688  0.17829618 -1.48617521  0.657610021
##  [92,] -0.029695988          NA -1.47634262  0.13552951  1.404770403
##  [93,] -0.104710358 -1.40008461          NA          NA  1.805717671
##  [94,]  0.824744427          NA          NA  0.58221335 -0.780991217
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##  [95,] -0.419899423          NA  0.24591707          NA           NA
##  [96,]  0.300186085  0.29759966 -0.64593031  1.54917750  2.544710754
##  [97,] -1.283947383 -1.75027408  0.48273109 -0.57432968 -0.908194013
##  [98,]           NA  0.18031924 -0.57765921 -0.97985713           NA
##  [99,]           NA -1.33266583  0.12490018          NA -0.094514004
## [100,]  1.719403622  0.52394339          NA -0.10372835  1.079017584
##             [,58]       [,59]        [,60]       [,61]       [,62]       [,63]
##   [1,]  0.67551321          NA           NA  0.60943649          NA  0.80049027
##   [2,] -0.18902847 -2.09444686  0.239892658  0.41383958 -1.51619948  0.51666181
##   [3,] -0.90129653 -0.16711584           NA -1.12907835  0.57671443          NA
##   [4,] -1.33136979 -1.16135276           NA  0.37140235 -0.80701502 -0.39915680
##   [5,]  0.43006675  1.61210143  2.516264799          NA  2.07943988          NA
##   [6,] -1.02310690 -1.15008530 -0.940468119  1.33265167 -0.03055295 -0.76014252
##   [7,] -1.84727140  0.78665107 -0.120516601  1.26945030          NA          NA
##   [8,]  0.20098716  1.26220640 -0.330261617 -1.19419447 -0.32957318 -0.08199768
##   [9,]  0.09362652  2.55117493  0.024758207          NA -1.95931239 -1.65290361
##  [10,]  1.49112658          NA           NA -0.26441446  1.76480018 -1.12152026
##  [11,]  0.53544752 -0.46427437           NA -1.30863877  0.15459658          NA
##  [12,]  1.06778638  0.52683075 -0.127847022  0.09652154  1.11982139          NA
##  [13,]  0.01625149 -1.22065850           NA  0.18316956  0.69054418 -0.41820700
##  [14,]  1.08664448          NA           NA  1.37526361  2.07272821  0.39295000
##  [15,]          NA -0.48897281           NA  0.35024618  2.10768959 -1.28712118
##  [16,]  1.24816884  0.29858866 -2.047038662 -0.88710461          NA -1.46330864
##  [17,] -0.22012293          NA -0.023921529  1.14845583          NA  0.26532078
##  [18,] -1.32855743  0.47543196  0.783998751  1.29339476  0.41796646          NA
##  [19,]  0.25119891  0.72983602  0.461968306  0.88496138          NA  0.57995208
##  [20,]          NA -0.07019908           NA -0.01047532 -2.26050767          NA
##  [21,] -0.58561938  0.44318151  0.517865528  0.58282361          NA  0.88172116
##  [22,] -0.07195359          NA -0.584821075  1.11355051          NA -1.93922159
##  [23,] -0.37203167          NA -0.431798510 -0.40953437  0.91196746          NA
##  [24,]  0.65176684          NA -0.166144811          NA -0.82592884          NA
##  [25,]  0.10145423 -0.17335740  0.277130536  1.01362127 -4.06129836 -2.31915429
##  [26,]  0.20599669  0.39533438  0.106767043 -1.19937566 -0.48830856 -0.34594442
##  [27,]  0.42924591 -0.29412785  1.170753813  2.09098162  0.62360218          NA
##  [28,]          NA  1.21286039 -0.305831766          NA  0.72296028  1.73689083
##  [29,]          NA -2.33044019           NA  1.28423232          NA  0.80112546
##  [30,]  0.15556514  0.47279642  2.265372838 -0.56420471 -1.32590726          NA
##  [31,]          NA          NA           NA -1.39565265          NA          NA
##  [32,]          NA          NA -1.533795531 -1.58932927 -1.08889736  1.84879797
##  [33,]  1.97397358 -0.83070001 -0.077779638          NA  1.11606068  0.71010093
##  [34,] -0.67875657          NA -1.059444182 -0.50703582          NA -0.75543165
##  [35,]  3.22807353 -0.36022409  0.597135095          NA -0.01995213 -0.36523818
##  [36,]  0.10967890 -0.14794039           NA -0.86700272  0.69216982 -0.56814435
##  [37,] -1.73349971 -0.26035623 -1.871915300          NA -0.99400035  0.12909590
##  [38,]  1.90070486  0.56658736 -1.706141768          NA          NA -1.05020620
##  [39,] -0.94462658          NA -0.956456962 -0.54160033 -0.34542791          NA
##  [40,]          NA  0.06746640 -0.676753898          NA -0.41183446  0.34257275
##  [41,]          NA -1.28830129  0.285610031          NA  0.42921459  0.32669262
##  [42,]  2.48037722 -0.86470478 -0.543086845          NA          NA          NA
##  [43,] -0.62738086  0.19939244 -1.341147646  1.42229110          NA  2.31222685
##  [44,]  0.03418185          NA  2.318539652          NA -0.15350503 -0.58868939
##  [45,] -1.16252171          NA  0.139242737  0.56358039  0.85403698  1.14086180
##  [46,] -0.75036755 -0.42364540  0.570863254 -0.79930899  1.42209250  0.53171750
##  [47,]          NA          NA -0.082834398 -1.89404126  0.20623892 -0.52877412
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##  [48,] -1.00441694  0.50872891  0.067620851  0.66609711 -0.96937390 -1.85883313
##  [49,]          NA          NA -0.482908132  0.50001769 -0.49869109          NA
##  [50,]          NA  0.79140509 -0.877369792  0.17467672  1.23339852  0.34644044
##  [51,] -0.63875908          NA -0.333153092  1.48618818  0.51079943          NA
##  [52,]          NA          NA           NA          NA -0.46442000 -0.60182036
##  [53,] -1.09195828          NA -0.634471124 -0.27482163 -0.96952833          NA
##  [54,]          NA  0.19733336 -0.510321013 -0.72438398  1.05862503 -0.17310981
##  [55,] -0.73274805  0.47505466 -2.311520908          NA -0.83456495 -0.33901431
##  [56,] -0.75983778  0.62556684  0.009209364  2.04222536 -0.79173466  0.44026896
##  [57,] -0.42929324          NA  0.661265494 -0.03187681          NA          NA
##  [58,]          NA -0.98160744 -0.807131475          NA          NA          NA
##  [59,] -0.35800888          NA  0.808388550          NA -0.66870082 -1.05287907
##  [60,]          NA          NA  0.208908430 -0.01692033  0.44079750 -1.26764819
##  [61,]  0.43169123  1.61752052  1.889760957  0.67435865          NA          NA
##  [62,]  1.13812797 -0.60614148           NA  0.21352179  0.24259438 -0.02951726
##  [63,]          NA  0.24520509 -0.122105682  0.16070772          NA          NA
##  [64,]          NA -0.78544621 -0.486139940          NA -0.19603076  1.02067336
##  [65,]          NA  1.53548104 -0.283352792 -0.36334306 -0.89676155  0.25806093
##  [66,] -0.17989518  0.13596990           NA -0.82420809          NA  1.16151492
##  [67,] -0.25636169 -1.53062481  0.746969566  1.00613248  1.56142246          NA
##  [68,]  0.46213055          NA           NA  1.26687033 -0.16430324 -1.18300030
##  [69,]          NA  0.47268879  0.795511258  1.20137002 -1.14775703          NA
##  [70,]  0.58160837  1.82413236  1.726713757  0.36011259  0.26240942  0.62781619
##  [71,]  0.80117913  1.67794698  0.378597355  0.02981306          NA  2.32349673
##  [72,]  0.12546365          NA -0.498737112 -1.88840170  0.58080162  0.08265592
##  [73,] -0.11649483          NA  0.140005572 -0.46553638  1.62941940          NA
##  [74,]          NA -2.09881235 -0.394162084          NA  0.20942345  1.31439256
##  [75,]          NA  0.27984100  0.681597730 -0.61558182  0.22738944          NA
##  [76,] -0.26522515  1.31173542           NA          NA -0.54122468  0.57247060
##  [77,] -0.62971675 -0.07791314 -0.631258446          NA  1.68993874  0.68763555
##  [78,]  1.88855959          NA  0.871235010          NA          NA  0.10838177
##  [79,]  0.13388553 -1.02894020 -1.852827383          NA          NA          NA
##  [80,] -0.05863467          NA -1.058419157          NA -2.03551904  0.46294923
##  [81,]  1.64999700  1.95736421           NA -0.04254386  2.31609117          NA
##  [82,]  0.94439445 -0.72603184 -2.224108737  0.93050136          NA  0.46100378
##  [83,]          NA -0.24528356  0.448891255          NA -0.32175369  1.29162110
##  [84,]  0.31762414 -0.02137237           NA -1.62035642  0.26064210  1.50849674
##  [85,]          NA  0.17581237 -0.062463670 -0.62455777 -0.10662981          NA
##  [86,]          NA          NA  0.281943023          NA -0.51583035  0.74681072
##  [87,]  0.14868405  1.62955088  0.308841160  0.50645879 -0.39718611  1.61639195
##  [88,]  0.16052520  0.02691427  0.497526849          NA          NA          NA
##  [89,] -1.53252558          NA  1.291164834 -0.60026724  1.74532656 -1.26245265
##  [90,]          NA          NA -1.648886684  2.11434227 -1.03498434  1.59381250
##  [91,]          NA -1.06009787 -0.937798051  2.23915292 -0.63567771  1.24862218
##  [92,]  0.09801063 -1.57903606 -0.365069853  0.50980521 -0.12538724  0.69073858
##  [93,]  0.02445121  2.28903702 -0.956764766          NA -0.08342364 -0.95012816
##  [94,] -0.90761902          NA -0.109861484 -0.48723499  0.20016172  0.72671872
##  [95,]          NA          NA  0.383282450 -0.60602017          NA -0.09230762
##  [96,] -0.24555264          NA           NA          NA -0.37577214  0.38661766
##  [97,]  1.52051934  1.54095521  1.482348066  1.12559971  0.34136078 -0.03777363
##  [98,] -1.04774382          NA -0.554800557          NA -0.35504749          NA
##  [99,]          NA          NA  0.499620870          NA          NA  1.54040809
## [100,]          NA -0.35863223  0.167082142          NA          NA  0.71147194
##              [,64]       [,65]       [,66]       [,67]         [,68]
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##   [1,] -0.49769442  0.67519583          NA -0.21338960 -1.1177261403
##   [2,]          NA -0.03602017 -1.02283701          NA  0.2621460443
##   [3,] -0.62896373          NA  0.97572706  0.95482025  0.5093953687
##   [4,] -0.71435885  0.15232453  0.64206767          NA -0.1537540627
##   [5,]          NA  0.67900092          NA          NA -0.9813747680
##   [6,]  0.91478104 -0.67647391 -0.15428607 -0.21308970 -0.0725341115
##   [7,]          NA -0.80044193          NA  0.97994444  0.6341664648
##   [8,] -1.38365211 -1.69266744  1.07766734  0.06069648  1.4031969602
##   [9,]  1.14944561          NA  1.36842074          NA -0.0120256479
##  [10,]          NA  1.62848405          NA          NA            NA
##  [11,] -0.04376981          NA          NA  0.61690457  0.6591445121
##  [12,]  0.90518460          NA -1.80198871 -0.03521916 -0.4758544656
##  [13,] -1.50834702 -1.87776771          NA  0.90660428  0.6071205781
##  [14,]          NA -1.64383753          NA  0.29155266  0.7523995239
##  [15,] -1.42548754          NA -0.05288705 -0.61811486  0.3470154946
##  [16,]          NA  1.31006639          NA  1.61831203  0.8872303173
##  [17,] -1.07630981 -0.15585794          NA  1.14620703            NA
##  [18,]          NA  1.37239214          NA  0.34591774 -0.3315735517
##  [19,]  0.68788494  0.65107427          NA -0.32787648  0.4238469049
##  [20,]  0.26332390 -1.93411270          NA          NA -1.0879774272
##  [21,]          NA  0.42806512          NA -0.63851559 -0.5611862786
##  [22,]          NA -1.22741802          NA -0.33186604 -0.0162109898
##  [23,] -2.10672231          NA -2.75489445 -1.02672334 -0.7752517010
##  [24,]  2.12076695          NA -1.00849750 -0.01057347 -0.5418516630
##  [25,]  0.20157034  0.01877726          NA -0.49723700            NA
##  [26,]          NA -0.84423361  1.06542600          NA -0.9789341602
##  [27,]  1.35138992          NA          NA  1.38589282  2.2724736348
##  [28,] -0.09550640 -0.54106777  0.34024136          NA  1.7388560572
##  [29,]          NA          NA          NA  0.31122608  1.2765068905
##  [30,] -0.14358802  0.88123819          NA          NA -0.7496260536
##  [31,]  0.09837379  0.18972819 -1.64484342  0.47228996            NA
##  [32,] -1.08153639  0.21371671          NA -1.44769108  0.3432647245
##  [33,]  0.99053180          NA          NA          NA -0.4120653456
##  [34,] -1.00370131 -1.50179292 -0.57883209 -0.48103944  0.4962547500
##  [35,] -0.03554302  1.55426117  2.49995673  0.43784820            NA
##  [36,]          NA  0.50022678 -0.58226728  1.91264414            NA
##  [37,] -1.09796317          NA  1.46874088  0.05116828 -0.0071328273
##  [38,] -0.11720884          NA  0.40550241  0.05097836  1.1109091468
##  [39,]          NA  0.24859537 -0.16320495          NA  0.5516007417
##  [40,] -1.63561844 -0.84803957          NA -0.67906851            NA
##  [41,] -1.71949542 -1.02630730          NA  0.16710515            NA
##  [42,]  1.34519569  0.42436101 -0.44201799          NA -1.4567348201
##  [43,] -0.14365934 -1.94418016 -0.92752699  0.06239388  0.0085144149
##  [44,]  1.24410489          NA  1.08394683  0.01408674  1.6079899188
##  [45,]  2.84131790 -0.56224781          NA  0.19601139  0.1407538571
##  [46,]          NA  0.95828365  0.11782843 -0.23126429            NA
##  [47,]          NA -1.39286249 -0.66692877  1.42992711 -0.8886605614
##  [48,]          NA -0.05683899  0.83184421  0.28206024  1.3030735254
##  [49,]  0.70140874 -0.49607625  0.74056503  1.21468399 -0.9488288166
##  [50,]          NA -0.17787998 -1.15106852  0.18560782  0.3076171144
##  [51,]          NA  0.58512689          NA          NA            NA
##  [52,] -0.86985643 -0.18318471 -0.11622573  0.53129990  0.7987449267
##  [53,]  0.08429778  1.97888616 -1.16788488  1.94443779            NA
##  [54,]          NA  0.63896946  0.26776112  0.33803261 -0.4433723835
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##  [55,] -1.14994873          NA -0.48007783  2.09055057  0.5723338656
##  [56,]  0.34733317          NA -1.15167147          NA -0.9494797327
##  [57,]  0.39247128          NA  0.75993702 -0.12839179            NA
##  [58,]          NA  2.18607755 -2.39297989 -0.54056931  0.6021839424
##  [59,]          NA  1.37724208  1.05113638  0.79356899 -0.5907114534
##  [60,]  0.56989071 -1.18505411 -0.38834908          NA            NA
##  [61,] -0.79126989 -1.12257950          NA  0.58641684  0.0959944515
##  [62,]  0.05588223 -0.23873301          NA          NA            NA
##  [63,]  0.94373951  0.01238067          NA          NA            NA
##  [64,] -1.04871362          NA  1.75367390  0.89005495  1.4631542547
##  [65,]          NA          NA -0.82111985  1.46063787            NA
##  [66,]  1.01235455          NA  0.74958140 -0.02998216            NA
##  [67,]          NA          NA -0.78751925          NA  0.0659820663
##  [68,]  0.04490837 -1.11430437          NA -0.09719670 -0.1261485869
##  [69,]  0.35273899 -0.91713623  0.26489464          NA            NA
##  [70,] -0.09205889 -0.68837925 -0.04515300  1.62428224 -1.3477864466
##  [71,]  1.07097841  1.56078791          NA -0.90270845  0.1880642969
##  [72,] -0.94584912  0.98230483 -0.84271414  1.29397893  0.3025446038
##  [73,] -0.28517950 -1.01456290 -0.29902245  0.86938280 -0.1431766718
##  [74,]  0.41820673  0.80711379          NA  0.56190357            NA
##  [75,]  0.12356866          NA  0.84485416 -1.36984921            NA
##  [76,]          NA -0.51580115  0.86836072          NA  0.2573986971
##  [77,] -0.82157759  0.21636034          NA  0.09034816            NA
##  [78,]          NA          NA          NA  0.12497950            NA
##  [79,] -1.45109910 -1.77291296          NA  1.29234503            NA
##  [80,] -0.49809593          NA          NA -0.19743459 -1.8327712896
##  [81,]  0.63628983 -0.98004388          NA -0.15149240  0.2117186050
##  [82,]  1.23227330 -0.02629492          NA          NA  1.3996640782
##  [83,] -0.29333591          NA          NA          NA  1.0235407966
##  [84,] -0.62790948  0.10155232 -0.64997628  0.51203017  1.2758100386
##  [85,]          NA -0.89349476 -1.24573145          NA            NA
##  [86,] -1.52373756          NA -0.54523917          NA -0.4045544884
##  [87,] -0.12690066  1.50344011          NA -1.91517659  1.4703397209
##  [88,]          NA  1.25952595  0.44800878 -0.90673510  0.9959388333
##  [89,]          NA  1.24853483  0.40299734 -1.30483452 -0.1744283609
##  [90,] -1.71775959  1.04252626          NA  0.22493224 -0.6419572230
##  [91,]          NA -0.53069090          NA -0.08661369  0.2596228964
##  [92,]  0.20846079  1.31481961 -0.64001535 -2.14764465 -0.2436257431
##  [93,] -0.80758483 -1.11712712  0.06637135  1.84928228  1.9999948663
##  [94,]          NA  0.98930259 -0.19987570  1.21822120  1.1061316427
##  [95,]          NA  0.15581890  1.17129978  1.03751500 -0.3795039502
##  [96,]  1.49985353  2.34331647          NA  0.49573541            NA
##  [97,] -0.40965988  0.85343120 -1.15898848          NA  0.0007554799
##  [98,]          NA  0.24140146  0.33890602          NA -0.9986643151
##  [99,] -0.03442018          NA          NA  0.08084285            NA
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##   [1,] -0.06089281 -0.151008921  0.709637203          NA  1.20743689
##   [2,] -0.47411203 -0.445784664  0.257179893 -0.70193427  0.71835567
##   [3,]          NA -0.111075669  2.074956635 -0.86921917 -0.31936462
##   [4,]  1.08212472 -1.828017807           NA -1.79536750 -0.65892683
##   [5,]  1.42266831 -1.297202609           NA  0.57964328          NA
##   [6,]  0.99699511  0.051060168  0.112533794  1.65293469 -1.60013238
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##   [8,]  0.38722919  1.968936443 -0.002094163  0.27798447 -0.21085108
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##  [12,]  0.75293777           NA -1.027730537 -2.57128203          NA
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##  [18,] -1.68307758  0.607049815  0.723779155 -0.61594491 -1.18479745
##  [19,]  0.74780803  2.805298931  0.872355334 -0.59389661  1.12323925
##  [20,]  1.44216553 -0.104448876           NA          NA  0.93769644
##  [21,] -0.13602205 -1.537510487 -0.447727104 -0.40582448 -0.98027377
##  [22,]          NA  0.470391747  0.268353997 -1.45716651          NA
##  [23,]  0.37251619           NA  0.943496342          NA  0.68168883
##  [24,]  1.09592644           NA -0.354521586  0.11494956 -0.34776870
##  [25,]          NA  0.170161846  0.987015480 -0.16176593          NA
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##  [27,] -2.06123745  0.435437810           NA  1.31361039  0.56347208
##  [28,] -1.51092047           NA  0.934828050          NA  0.92829571
##  [29,]          NA           NA  0.336785837 -1.18566280 -0.27906058
##  [30,] -0.45152329           NA           NA -0.42530978          NA
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##  [32,] -2.48355153  0.062192846           NA -0.97670404          NA
##  [33,]  1.04931110 -1.306785467  1.423798897  1.22024235  2.01504953
##  [34,]          NA  0.527863568  0.080679011  0.51715641  1.33815765
##  [35,]          NA  1.673449772           NA  0.14452265 -0.65409333
##  [36,]          NA           NA -0.949221172 -0.08938365  1.76297184
##  [37,] -0.39725450           NA           NA  0.12418162 -0.98179933
##  [38,] -0.79929153           NA -0.302606723          NA          NA
##  [39,] -0.42683338  0.281891709  0.575433220          NA -0.11099048
##  [40,] -0.16673997  0.006541791  0.458201974  0.54573160  1.43072845
##  [41,]          NA -0.190801139           NA  1.54539312 -0.96262967
##  [42,] -1.87317173 -1.560975247 -2.634083065  1.89487363 -0.58193494
##  [43,]  1.15414662           NA -0.452498968  1.07376508          NA
##  [44,] -1.50354606  0.633138649 -0.813515971  0.90100955  0.76713674
##  [45,]  0.67471091 -0.934090556  0.857872471  1.58517841 -0.91600125
##  [46,] -0.73315585  0.243908642  0.519087888  1.95070088 -0.58086502
##  [47,] -1.50377666           NA -0.659837808  1.25388326  0.72663364
##  [48,] -0.26021219  0.251576537 -0.478831175          NA  0.04074980
##  [49,]          NA           NA           NA -0.77386487          NA
##  [50,]          NA           NA  0.365800131          NA          NA
##  [51,]  0.36207297           NA           NA          NA          NA
##  [52,]          NA -0.836420186  1.140384816  0.38002495          NA
##  [53,] -1.03916994           NA -0.433571193 -0.11672849 -1.25695354
##  [54,] -0.75935825 -0.560296597 -1.657665069 -0.20889572 -1.81265413
##  [55,]  0.31705738 -0.314468270 -0.045079813          NA  0.22425278
##  [56,]  1.79679786  0.334646170 -1.190421386          NA -0.42459565
##  [57,]  3.03704248  0.459810796 -1.773787130 -0.41483189 -0.15410656
##  [58,]          NA  0.664304869 -1.911322772 -0.30059084          NA
##  [59,] -0.40585807 -1.001424845 -1.710029843          NA          NA
##  [60,]  0.03742788  0.962629294  0.451944410  0.05603961          NA
##  [61,]          NA -0.642568637 -1.533637148  0.68370370          NA
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##  [62,]          NA -0.303656934  0.030056295  0.85012582 -0.19589335
##  [63,] -2.10720701           NA -0.546289614 -1.04318190  0.82407862
##  [64,]  0.54366186 -1.294598200           NA          NA          NA
##  [65,] -0.23492611           NA           NA          NA          NA
##  [66,] -1.18009360 -0.028526167 -0.127933537          NA -0.62123241
##  [67,] -0.85036955           NA  0.078198419 -1.00839176  1.79770978
##  [68,]  0.09962700 -1.078458081  0.139247718          NA -0.02256974
##  [69,]  1.69776260 -2.244222791  0.938772659          NA  0.29804496
##  [70,] -0.24100556  0.475787056           NA          NA -0.24802366
##  [71,] -0.60835357 -0.576051462           NA          NA -0.04718246
##  [72,]  0.99817924           NA -0.800767416          NA -0.12158003
##  [73,]  0.42272970           NA  0.229234829          NA -0.54726946
##  [74,] -2.09062596           NA -0.996603632 -0.44318175  0.60867780
##  [75,]          NA -0.425660716           NA -1.31287941 -0.87146673
##  [76,]          NA  1.580826228 -1.075791646 -0.26591885 -0.20943285
##  [77,] -1.05713004 -0.907395717 -1.251132802  0.64461704  0.02156429
##  [78,]          NA -1.924312206  1.475659808          NA          NA
##  [79,]  0.49191648 -1.785717649  1.485696784  2.07556808 -0.75107156
##  [80,]  2.06336643           NA -0.939741867  0.16357319 -0.11231829
##  [81,]          NA -1.098892010  1.890537363 -0.56707178  0.55365233
##  [82,] -1.31437200 -0.064339131 -0.683357046  1.11758863  0.63429428
##  [83,] -2.34746825           NA           NA  1.19194772          NA
##  [84,]  0.57337318  0.793856973  1.106630004 -1.73722739          NA
##  [85,]  0.15663733 -0.142272051           NA          NA -0.11814239
##  [86,]  0.95507678 -0.758802211 -2.939583869  0.13448909 -0.47735885
##  [87,]          NA           NA  0.255953229 -1.05221049 -0.85508336
##  [88,]  1.73110850  0.372125129 -0.146872179 -0.23402245  1.36651955
##  [89,]  0.74757376           NA  0.971154934          NA -0.35902698
##  [90,]          NA           NA -1.744773400  1.76164207 -0.86054425
##  [91,]  0.41304045 -0.115472200  1.141263259          NA  0.03719188
##  [92,] -0.39844704  0.096547309  0.130672616 -1.26169608 -0.95146963
##  [93,]  0.05371582           NA  0.841135138          NA  1.79332044
##  [94,]  1.20256166 -0.378168141 -1.359700683 -0.05698612 -0.92787841
##  [95,]          NA -0.523141512 -1.784160569 -0.01259722          NA
##  [96,] -0.47109253  2.138670126 -0.558564052  0.92201036  0.38056642
##  [97,] -0.77445139 -0.077466531 -1.076327936 -0.01340743 -0.06649104
##  [98,] -0.74579592  0.342778290 -0.299143505          NA          NA
##  [99,] -0.66201690 -1.404535604 -0.287601387  1.93603728  0.61945810
## [100,]  0.10100346 -0.384648322           NA  0.82876274          NA
##              [,74]         [,75]         [,76]       [,77]       [,78]
##   [1,] -0.039248503 -8.384968e-02  0.9650209761          NA  1.04277925
##   [2,] -0.724189332  1.133006e+00            NA -0.15185695  1.14483926
##   [3,] -0.157789066 -8.181746e-01 -0.0841989419  1.94419546  0.74796244
##   [4,] -1.239671262 -1.770495e-01            NA  1.02415927          NA
##   [5,]           NA  7.227813e-01  0.7751883996  0.92055576  1.18628136
##   [6,] -0.039243253  9.105898e-01 -1.3279861868 -0.01040976          NA
##   [7,]  0.534239067            NA -0.7498802618 -0.36160029          NA
##   [8,]  0.236227352 -1.015652e+00  1.9208363636  0.24444132  0.91799221
##   [9,] -0.517278175 -3.036863e+00 -1.1201413111 -1.26601020  0.07167077
##  [10,]           NA           NA            NA -0.25546883          NA
##  [11,]  0.968640012 -4.035996e-01  0.0893134132          NA -1.50830146
##  [12,]  0.288359670 -3.077926e-01            NA          NA          NA
##  [13,]  0.937789896  5.782079e-01            NA  0.18541141  0.89348563
##  [14,]           NA -5.884296e-01 -2.2440138948          NA  0.40250528
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##  [15,] -0.847187260           NA -0.3675002503 -0.13714662  0.17052387
##  [16,] -1.131506107  8.790714e-01 -1.1655360407 -0.42049517 -0.40310310
##  [17,] -0.070948398  1.470452e+00 -0.1532621307 -0.94969920  0.12244114
##  [18,] -0.703418507 -2.167796e-01 -1.3195446896  0.32454801  0.02477015
##  [19,]  0.768182139           NA  1.6816254669  0.88680246 -0.63866678
##  [20,] -0.470122968           NA           NA          NA -0.77160701
##  [21,]  0.423290836 -6.304502e-01  0.0312988778          NA -0.41960558
##  [22,] -0.430401747           NA           NA -1.14716059  0.22800897
##  [23,]  0.009531589           NA  0.1067215044  0.43542922  0.28070242
##  [24,]          NA           NA           NA -1.16042902  0.26108451
##  [25,]  0.027402505 -8.802246e-01  2.0496674261          NA  0.07940369
##  [26,] -0.580582253 -5.435799e-01  2.1212212505 -1.05394164 -1.44149420
##  [27,]  0.079414080  1.788257e+00 -0.6805472639          NA          NA
##  [28,] -0.711856470 -1.455669e+00 -1.2565903449          NA          NA
##  [29,] -0.914941917 -4.174629e-02  0.2117510236          NA  0.41314159
##  [30,]          NA           NA  0.9739387446  0.65479489 -0.35375198
##  [31,]  0.423462028           NA           NA          NA          NA
##  [32,] -1.116753157  2.057705e-01 -0.4195455722          NA  0.41206156
##  [33,]          NA  6.507276e-02  2.0020390148          NA          NA
##  [34,]  1.085041115 -2.285585e-01  1.9714214595 -2.50295867          NA
##  [35,]  1.432852911 -8.570538e-02           NA          NA  0.79117378
##  [36,]          NA           NA -0.3966829602 -0.21753450          NA
##  [37,]          NA           NA  0.9217168680          NA          NA
##  [38,]  0.637507718 -7.738204e-02 -0.5031982048 -1.49898207 -0.64226953
##  [39,]          NA  7.625303e-01  1.2098688798 -0.21023568  0.84786825
##  [40,]          NA  1.696807e-05           NA  1.12485158  1.68746424
##  [41,]  0.163728245  3.983355e-01 -1.2016722694  0.27819550  0.06511539
##  [42,]          NA -1.229866e+00  0.4604430460  0.30973935 -0.52335607
##  [43,]          NA           NA  0.3544155460          NA          NA
##  [44,]  0.335782481  1.349938e+00  1.3372036474 -0.86396667          NA
##  [45,]  0.228429770  3.729423e-01 -0.2273563232 -0.19049608  0.43141858
##  [46,]          NA -1.246548e+00  1.0907627889          NA          NA
##  [47,]  0.080900212           NA           NA -0.35978770          NA
##  [48,]          NA           NA  0.5802183837  0.72161754  1.47691381
##  [49,] -0.519421235  3.126159e-01           NA -0.16125554 -1.87165092
##  [50,]          NA  2.344798e-01           NA -0.07378438  0.41766393
##  [51,]  0.521687208           NA -0.2271287417  0.83740193          NA
##  [52,] -1.293570546  4.823271e-01 -0.1768563960          NA -1.14702769
##  [53,] -0.694596136  5.000986e-03           NA          NA  0.79658263
##  [54,]  0.124116522 -2.937175e-02 -1.2157014025 -0.35111635          NA
##  [55,] -0.486807925 -1.518291e+00           NA -0.53285117          NA
##  [56,]  1.330783627  1.519174e+00 -0.0444173409 -1.26684474          NA
##  [57,]  0.838322413           NA           NA          NA  0.87560366
##  [58,]  1.303724018 -5.093621e-02  0.7836376937 -1.12026745 -0.22852851
##  [59,] -0.814096253           NA  0.3054452143  1.62526889  0.95960069
##  [60,]  1.001237582 -7.881976e-01 -0.6108844376  1.25144692  0.36672365
##  [61,]  0.779055969 -2.729213e-01  1.7842297750 -0.29436047 -0.59388721
##  [62,] -0.729172666 -3.091781e-01 -0.3910231609          NA  0.49192980
##  [63,] -1.064358210           NA           NA -0.50527974          NA
##  [64,]  0.612835449  9.764086e-02  0.3026207185 -0.08715011 -1.44126863
##  [65,] -0.614757748  6.814005e-01 -0.8439209894          NA  2.03731892
##  [66,]  0.178074677  1.248963e-01 -0.0891521286 -2.08567892 -0.68736333
##  [67,] -0.245748671  1.589966e-01  1.5944157694 -0.30117363 -1.19281592
##  [68,]          NA           NA  0.1721780892 -0.22242568          NA
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##  [69,] -0.045949482 -1.256516e-01  0.6086622447 -0.26676509  0.17633811
##  [70,] -0.565428444  7.452397e-01  1.8047442418  0.96053009 -1.10823228
##  [71,] -0.107546533 -8.804025e-01            NA  0.19017170  0.34543546
##  [72,] -0.761093436 -1.966184e-03 -0.8406565956          NA          NA
##  [73,]  1.575385183  1.292284e+00            NA          NA  0.21833893
##  [74,]           NA -7.868398e-01            NA  0.28976937  0.26725646
##  [75,]  1.197302482 -5.063373e-01  0.7119747402 -1.74100047  0.58785686
##  [76,]  2.034921975  5.126526e-01            NA -0.42665827 -1.65284104
##  [77,]  0.579739486 -4.035039e-01            NA          NA -1.65466689
##  [78,]           NA  1.934714e+00  0.6358510867          NA  1.74644659
##  [79,]  0.813915864  3.396727e-01 -0.2667936118  0.97391608          NA
##  [80,]           NA  2.305093e-01  0.1087406583          NA  2.05672700
##  [81,] -2.323266735 -3.133913e-01 -1.0655956055 -1.91644829 -1.34719500
##  [82,]           NA -1.748080e+00  1.1274559645  1.32243367          NA
##  [83,]           NA            NA            NA  1.84353794 -0.14197938
##  [84,]  0.880526536 -1.719171e+00  0.2287626199  0.91273183  0.46750448
##  [85,] -0.627349858  8.936579e-01  0.2092717054  0.94016223  0.05129145
##  [86,]  0.714901499  2.545597e+00  0.3394162341          NA -0.22048056
##  [87,]           NA -2.628934e-01  1.0936711071  0.44379014 -0.76822273
##  [88,]  0.176414098            NA -0.7835813298 -1.75168686  0.76470374
##  [89,] -0.373226072  1.830110e+00            NA  1.29423489  0.37807715
##  [90,] -0.901164657 -1.238173e+00  0.0203477773  2.07891038 -1.55750589
##  [91,]           NA  6.631355e-01            NA  0.51553553          NA
##  [92,]  0.725322353 -1.045985e+00            NA          NA          NA
##  [93,] -1.356588361  1.459254e+00  0.1211009481  0.31158657  0.97813640
##  [94,]           NA -1.114632e+00 -0.0003925677          NA -0.03526830
##  [95,] -0.994466380 -1.219677e+00  0.2391304018          NA -0.48394123
##  [96,] -0.419518943 -1.046093e+00 -1.7365029060          NA -1.14216576
##  [97,]  0.609742891 -1.640379e-01  1.0566345044  0.83889764          NA
##  [98,] -0.082801000            NA  0.7858222572 -0.12933148 -0.23627560
##  [99,]  0.177305081  4.226988e-01 -0.0829317011  0.09058810 -0.74143292
## [100,]  0.263484077 -6.480908e-01 -1.0130161895          NA  1.24304979
##             [,79]       [,80]       [,81]        [,82]        [,83]
##   [1,] -1.20576071          NA  0.61445539 -1.259295754 -1.523362363
##   [2,]  0.49930398  0.05968109  0.01178305           NA -0.315360703
##   [3,]  1.33728971 -1.15611121          NA -0.503073623           NA
##   [4,]  0.21391208  1.40113789 -0.10467987           NA  0.061094936
##   [5,]  0.71823966          NA -0.23302521 -0.004042477  1.974334829
##   [6,]          NA          NA  0.05967977           NA  0.477747306
##   [7,]          NA  0.76659159          NA  0.081034458 -0.473808960
##   [8,]  0.86702339  1.60587470 -1.27006467           NA           NA
##   [9,]          NA          NA          NA           NA  0.810590486
##  [10,]          NA          NA          NA           NA  1.525382150
##  [11,]  2.30124740  0.88633568          NA -1.495108039  0.175771531
##  [12,]          NA  0.49114031 -0.50922445  0.153697375           NA
##  [13,] -1.29665110  0.58296194 -0.64059483  1.417540064 -0.244575496
##  [14,]  1.62476769          NA          NA           NA           NA
##  [15,]          NA -1.66495779  0.04762255           NA  1.815529711
##  [16,]          NA -0.40100225  0.83783465  0.605324545           NA
##  [17,]  0.68591448          NA  0.25740003 -0.024152556           NA
##  [18,]          NA -0.78667415  0.26703301 -1.031982899  0.048731996
##  [19,]  0.76626308 -0.36610780          NA           NA  0.458278622
##  [20,]  0.42000099 -0.53988973  1.14645758 -1.782975617           NA
##  [21,]  0.38893697  0.97019895 -0.37760394           NA -0.693949874
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##  [22,]  0.94219492          NA          NA  1.465438999 -0.199358015
##  [23,]          NA -1.13129435 -1.36800193  0.371811774 -0.573709897
##  [24,] -0.16757408  0.28077502 -0.85741784  1.045888516 -1.248918554
##  [25,] -1.84347611  1.06166502          NA           NA  2.663709691
##  [26,]  0.25713559  0.29184467          NA  1.925406848 -0.719515563
##  [27,] -1.63044039 -1.15355885 -0.86461417 -1.084439903  1.050834182
##  [28,]  1.20751365          NA  1.15948033 -0.601035890           NA
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##  [31,]  1.48982198          NA -0.26036829 -2.447472333           NA
##  [32,] -0.77950183          NA          NA           NA  0.548676016
##  [33,] -0.33184120 -0.24444847 -0.59170730  0.603277727           NA
##  [34,] -0.34274094 -0.01901826  0.82623651 -0.136190774  1.138438659
##  [35,] -0.77643480  0.25632016 -0.43618448 -0.213860553  0.220174382
##  [36,]  1.79818018          NA -0.47638226  0.856109471 -0.937288995
##  [37,]          NA -1.19867827 -1.35338778  0.917929173 -0.136333532
##  [38,]  0.12472849  2.10117964 -0.03354883           NA  0.814931210
##  [39,] -1.48624792 -0.36948715          NA           NA -1.190518411
##  [40,] -0.20292785 -0.06190513          NA           NA -0.329810191
##  [41,]  0.04366777 -0.18238751          NA -0.012223347 -0.838467660
##  [42,]          NA -0.82430581  0.30681204  1.465644892  0.255197128
##  [43,]  0.03472473 -0.88650755          NA -0.902795171           NA
##  [44,]  0.92841344          NA -0.99471869           NA -1.218141535
##  [45,] -0.09459187  2.36822853  2.56055376  0.967375220 -1.097556291
##  [46,]  1.06570314          NA          NA -1.200836411           NA
##  [47,] -0.30458505  0.41799471  0.32088715 -0.343074242           NA
##  [48,]          NA  0.36401167 -0.01993562 -1.224657971 -0.153733981
##  [49,]  0.52742301          NA          NA -0.080939854  0.585793301
##  [50,] -1.45921235 -0.52897104          NA  0.083391543  1.766460742
##  [51,]  2.46187971 -1.63658549          NA -0.434408216  0.306426044
##  [52,]          NA -1.78286463  0.94055732 -0.978870359           NA
##  [53,] -0.73960521 -0.19669348          NA  1.227255010           NA
##  [54,]          NA          NA -1.29715855           NA  0.320447667
##  [55,] -0.16953166  1.53559901  1.75195863           NA  0.841124752
##  [56,]          NA          NA  0.80596725  1.145168539 -1.443084136
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##  [58,]  1.13821277  2.02834227 -2.37314207 -0.390393740 -0.684375645
##  [59,]  0.39615172  0.13822783 -0.35070373           NA  0.956210221
##  [60,]  0.91901180 -1.79053684  0.09074896  0.281254658           NA
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##  [62,]          NA          NA -0.45353559           NA           NA
##  [63,] -2.13076398  0.33562780          NA  0.739730047 -0.468946077
##  [64,]          NA          NA          NA -0.817438660 -0.112233837
##  [65,] -1.21721119          NA  0.13122142  2.065935016           NA
##  [66,]          NA          NA  0.33275044  0.776347303 -0.604337048
##  [67,] -1.03495847  0.52620213  0.51428592  1.450535582 -0.005888468
##  [68,] -0.83032509 -0.19627241 -0.49460454  0.855038925  0.922741855
##  [69,]          NA -0.54706982          NA -0.788218436           NA
##  [70,]  0.43906068 -0.35908050          NA  0.499599163           NA
##  [71,]  1.45224687  0.88621371          NA -1.164784023  0.576355021
##  [72,]  0.56396591          NA  0.47242800           NA -1.179916524
##  [73,]          NA  0.39128672 -0.21975626  0.428543565 -1.001846882
##  [74,]  0.28057766          NA -0.20277735           NA  0.168312336
##  [75,]  0.01814588 -0.73133307 -0.86569133  0.415265172 -1.023594063
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##  [76,] -1.15147493  0.40753378  0.40276542 -0.103123183  0.923822370
##  [77,]          NA  0.89646622          NA -0.811896936  0.041864759
##  [78,]          NA  0.24881747  0.78103404 -1.588554119  0.455282865
##  [79,]  0.84923602 -0.06596697 -0.31326596  1.495091823           NA
##  [80,] -1.02721462          NA  1.33151912 -0.407191985 -0.601904060
##  [81,]  0.27458310  0.09764144 -1.48246377           NA           NA
##  [82,]          NA          NA -0.81098233  0.114737380           NA
##  [83,]  0.57022958  0.75259274          NA -1.135615539  1.578549313
##  [84,]          NA  1.42027838  0.20294226           NA           NA
##  [85,]  0.36047723 -0.95796426          NA -1.132474800  0.837177079
##  [86,]  0.53249976 -0.52273162  0.07917942 -0.615569558 -1.439377144
##  [87,]          NA  0.20279035  1.39431746           NA           NA
##  [88,]          NA -1.06944898  0.38825467           NA  0.450054916
##  [89,]          NA  1.02773272 -0.86016948 -1.010889249 -0.426853107
##  [90,] -2.21831001 -0.30970072 -0.57282156 -0.105818382  0.624776207
##  [91,]          NA  0.82029719 -0.62912175 -0.980062823           NA
##  [92,]  1.28691207          NA -0.98544089           NA           NA
##  [93,] -1.67813225  0.82860724 -0.94592295           NA           NA
##  [94,] -0.64978048 -0.87702026  0.39726004 -0.789177028  0.590570960
##  [95,] -0.48360635  0.03921207 -0.36378181           NA -0.041701333
##  [96,] -0.06976460  2.06813535          NA  0.346028599  1.981583810
##  [97,]          NA  1.03664952          NA           NA  0.171474535
##  [98,]  0.44430601 -0.55649986  0.57612449  0.481179149           NA
##  [99,] -1.32995212          NA -0.05135487           NA  0.893922288
## [100,]  0.74653074          NA          NA  1.205750526  2.131803976
##              [,84]       [,85]       [,86]       [,87]       [,88]        [,89]
##   [1,]          NA          NA  0.03238726          NA -2.24744315  0.467158885
##   [2,]  0.27389610  0.67065919          NA          NA          NA -1.513059632
##   [3,]  0.01605807  0.62270803 -0.55907914 -0.22460097  1.48740799  0.829505229
##   [4,]  0.90365458 -1.31795055          NA -1.58121840  0.05870544 -0.460543615
##   [5,]  0.68348856          NA -3.18227029          NA  1.01092219 -1.510549380
##   [6,]  0.50115870          NA -1.17998597 -0.04232665  0.19086486 -0.922405831
##   [7,]          NA  0.58496542 -0.43748207 -0.35906281          NA  0.644436685
##   [8,]  1.10892085 -0.80659100          NA  0.81610664          NA  0.763327450
##   [9,]          NA  0.18308123          NA          NA          NA           NA
##  [10,] -1.85988776 -2.06538708 -0.02010784 -0.61785310          NA -0.716200870
##  [11,]  1.11191712          NA  0.85410417          NA -0.31791604 -0.458500318
##  [12,] -1.57678944          NA -1.63023006  1.32503075 -0.78886957  1.529385591
##  [13,]  1.08275672 -1.16051508          NA  0.73396148 -1.47855498  0.628801357
##  [14,]  0.75926062 -0.32013963          NA  0.08412157          NA           NA
##  [15,]  0.86363169  0.61210693 -0.54326366          NA -1.29204974 -0.018905936
##  [16,]  1.24431367 -0.13278326  0.83078816          NA  2.15315253 -0.230830736
##  [17,]          NA          NA -0.07194887  0.93046019  0.08202492  1.354255895
##  [18,]          NA          NA  0.88277487          NA  0.97327009           NA
##  [19,]  0.83201398          NA -1.81027393  0.47900563  0.10405816  0.841373662
##  [20,] -2.19883427 -0.38546165  0.78341507  0.79740012          NA           NA
##  [21,]  2.34385910          NA          NA  0.12281867          NA  1.340242501
##  [22,] -1.42821717  0.40985106          NA          NA          NA  0.014650433
##  [23,]  0.48066474          NA  1.80270103  1.44065673  0.53809143           NA
##  [24,]  0.90292742  0.58661450 -0.30569177 -0.72461641 -1.45930973           NA
##  [25,]          NA -0.76008978  1.15114074  0.30605950 -0.02546128           NA
##  [26,]  1.84806515 -1.56328189  0.65925561  1.72516078          NA -0.155267334
##  [27,]  0.93531763  0.40279783 -1.66766773  0.66145184          NA -0.166151838
##  [28,]  1.16606804          NA -0.22932224 -1.00973568  1.21362862           NA
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##  [29,] -0.26538420 -0.57810096 -2.17154832 -0.33043290  0.60566747           NA
##  [30,]          NA -0.04016879  0.35413978          NA  1.01816407           NA
##  [31,]  1.49304745 -0.26136518 -0.70668047  0.41308415  0.26616292 -0.352387818
##  [32,]          NA          NA          NA -0.23160950 -0.56723421  0.925628244
##  [33,]  0.25733907  0.37889665  0.14178147 -0.63204264 -0.15570687           NA
##  [34,]  0.51217836 -0.39184149 -0.54645972 -1.04402669  1.53190328 -0.622938493
##  [35,]  0.43205136 -0.36664824 -0.65000342 -2.62493936 -0.26146363  1.095998653
##  [36,] -0.39569309          NA  1.37635979 -0.67329797 -1.14138031           NA
##  [37,]  0.87152812          NA -0.21473643 -0.29501845  1.66100164           NA
##  [38,]  0.07286741  0.85814814          NA -0.36006553  0.33479958 -0.491378246
##  [39,]          NA          NA -1.00841797 -1.40301464 -1.12041979           NA
##  [40,]          NA -1.37142831 -1.75043720          NA -1.18193768           NA
##  [41,] -0.93753801          NA -0.07629156 -1.98732710  0.40452694  0.284977803
##  [42,] -1.73884730  0.93468013 -1.53848764 -0.34348063          NA -0.643653463
##  [43,]  1.05180853          NA  2.08434836 -0.41083466          NA -0.120134996
##  [44,] -0.67539512  1.28264537  1.41585481          NA -0.01577766  0.370435298
##  [45,]          NA  1.29773424  0.01622468          NA -0.10833353 -0.252981860
##  [46,] -0.91007718  0.03452919 -0.45252663  0.00586477  1.18841654 -1.135817452
##  [47,] -0.87658722          NA  0.80171617  1.82023828  3.31939891 -0.731546564
##  [48,]  0.68828664          NA  0.75429297 -0.05868613  0.38914169  1.719609556
##  [49,]  0.74613605 -0.44303447  0.39910564 -0.79367840          NA  0.480430864
##  [50,] -0.36713584 -0.76886882  0.69110466          NA -1.37151662  0.305207354
##  [51,] -0.85146369  1.13226837  0.98347613  1.29342693  0.00547643           NA
##  [52,]  1.79834876          NA  0.50722823 -0.52882078  1.06721458 -0.677707110
##  [53,]          NA          NA -0.34231586  0.73348299 -0.10078399 -0.988905861
##  [54,]          NA          NA -0.93415483 -0.36850938  1.85158265 -1.433018005
##  [55,] -0.12589653 -1.62965705          NA  0.60192396  0.18676226           NA
##  [56,]  1.08516079          NA -0.79770691 -0.20221410 -0.15547304           NA
##  [57,]          NA          NA          NA          NA  0.18960879 -1.176049793
##  [58,] -0.25160563  0.04833629  0.09599746          NA  1.45753079           NA
##  [59,] -0.21977743 -0.82647932 -0.72830650          NA -0.22345655           NA
##  [60,] -1.48152271  1.35973925 -0.65999949          NA -1.31464104 -0.547533829
##  [61,] -0.20878936  0.08939042 -0.68134530 -0.91633375 -0.61511261 -0.341257899
##  [62,]          NA  0.99200105 -0.36518212 -0.87924288  0.24843353  0.779916234
##  [63,] -0.86750528          NA          NA -1.11326220 -1.09119695           NA
##  [64,]  0.79152282 -0.96190191 -1.49860750          NA          NA           NA
##  [65,]          NA  0.71284186 -0.76747907 -0.71681641          NA  1.198421002
##  [66,] -0.56164804          NA -1.20683487 -1.49349543 -0.56156441 -0.413969038
##  [67,]          NA -1.11367271          NA          NA          NA           NA
##  [68,] -2.28136576 -0.94049100 -0.88381835 -1.06771658          NA  1.004961178
##  [69,] -0.59675840          NA -1.21991851  0.59470555 -1.73485221 -1.092471896
##  [70,]          NA          NA -1.99268717 -0.60385627          NA -0.158401042
##  [71,]          NA  1.33939257  0.65750482          NA  0.10221233           NA
##  [72,]  0.70040013 -0.42196967 -1.55579590 -1.09737010 -1.22692801 -0.005641043
##  [73,]  0.77003143  1.65099364  0.31659652  1.27665570 -2.00775852 -0.150540735
##  [74,] -0.29308969          NA          NA          NA          NA           NA
##  [75,]          NA  0.31549284  1.07825169  0.10104739  0.07493379  0.415302008
##  [76,] -1.17913273          NA -0.70959923 -0.67373418          NA -0.270997410
##  [77,] -1.38744473          NA -0.78334007  1.30659537 -0.25601005  0.200252632
##  [78,] -0.06325704          NA  0.95646802  1.52063176 -0.61576668           NA
##  [79,] -0.28408413  0.42461853  1.84110417  0.09189193  0.69063289  0.275656826
##  [80,] -0.35444799  0.87600979          NA  0.16087450          NA  1.512321428
##  [81,] -0.97764876 -0.82324250          NA  1.00749716  1.57518265  0.039929531
##  [82,]  1.90527947 -0.50688467          NA          NA  0.76921384  0.514048574
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##  [83,]          NA -0.91404111          NA  1.11066415          NA           NA
##  [84,] -0.98513013          NA -0.65059728 -0.83620062          NA  0.976500535
##  [85,]  0.23457257 -1.54317539 -0.20536401  1.45060300          NA  0.988408620
##  [86,] -1.54322562  0.36622384 -0.06334212  0.56505910  1.22841371           NA
##  [87,] -0.28992836          NA          NA          NA  0.20302164 -0.089662170
##  [88,]          NA  1.24431098          NA -0.16254998  0.42400355           NA
##  [89,] -0.11409800 -0.87824672  0.39079259          NA  0.55828383           NA
##  [90,]          NA          NA -0.02618857 -1.39694256  1.01956163           NA
##  [91,]  1.00335293          NA -0.96675112  0.50101129 -0.16526641  0.557238987
##  [92,]  0.89925999          NA          NA  0.68542780  1.23599639 -0.129848374
##  [93,] -1.50914156 -1.87525245 -1.05807987 -0.18942043 -0.66408161  0.315321591
##  [94,]  1.59982737          NA -0.51928695  0.01784325 -0.67478055           NA
##  [95,] -0.83763895 -2.22353524  1.08440732 -0.65712031  1.24310982 -0.973152629
##  [96,]          NA -0.83070445 -1.18939206          NA  0.10720311  1.730787416
##  [97,]  1.47487596 -2.20773435          NA          NA          NA  1.525033792
##  [98,] -0.66386041  0.13452441 -1.98405032  0.06786179  0.15295668 -0.280351772
##  [99,]  0.12097502  2.95015221  0.56682856  0.87540389          NA  0.062747378
## [100,]          NA  1.80556957          NA  2.22776043  0.88351756  0.570896122
##              [,90]         [,91]       [,92]       [,93]        [,94]
##   [1,]  1.30538873            NA -0.79947948  0.05177956  2.121525821
##   [2,] -0.39018399 -2.1113612810  0.09475830 -0.75837069 -0.503655189
##   [3,]          NA            NA -0.56386616  1.11689762           NA
##   [4,]  0.38087428 -0.3730568230  2.00324895 -1.88134175  0.179485243
##   [5,] -1.38626783 -0.1101576247  1.23043962          NA -1.027939086
##   [6,]          NA -1.6118454742 -0.76371851  0.88595846 -1.018965780
##   [7,]          NA -0.5521011678          NA          NA  0.025845313
##   [8,] -0.76756368  0.1050667495 -0.34417229  0.76042407           NA
##   [9,]          NA  0.1486499667 -0.55551808  0.45384748  0.683940010
##  [10,]          NA -0.3176380399          NA          NA  1.540720873
##  [11,]  1.96088269            NA -1.17435690          NA  0.434992891
##  [12,] -0.43673424            NA  0.04986985  0.46126825  0.348692073
##  [13,]          NA -0.3778335239  0.13937070 -1.49912115           NA
##  [14,]  0.14143468 -2.0575673015  0.15744062 -0.94940902 -1.623104142
##  [15,]          NA -0.7005176482 -0.24078994 -0.24101101  0.124145192
##  [16,]  0.36655141 -0.2378052194          NA  1.95494793 -0.641888054
##  [17,] -0.38734236  0.4317320595          NA  0.41588567  0.037043046
##  [18,]  0.79445603  0.2093332402          NA  0.28315980           NA
##  [19,]          NA            NA  0.53132631          NA  0.164552593
##  [20,]  0.06822548 -0.7118865002          NA  1.13291468           NA
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##  [23,] -0.93821611            NA          NA -0.59073862           NA
##  [24,]          NA  1.0323460165 -0.94159619          NA  0.076283124
##  [25,]  0.69792262  1.2414184063 -1.07939459          NA -0.044058639
##  [26,] -0.54612644 -1.2542764898 -1.40699860          NA  1.204058992
##  [27,]  1.19065207  1.3256389848 -0.69985114 -0.04968856  0.347668284
##  [28,] -0.97015152 -1.7016544079          NA          NA -0.109830229
##  [29,] -1.16234090            NA -1.00540720          NA           NA
##  [30,]          NA            NA  0.47364962          NA -0.708571724
##  [31,]  0.29740538            NA -1.28314911          NA -0.171220478
##  [32,]  1.77553798 -0.0581065257  0.47495389          NA           NA
##  [33,]          NA  1.3873402667 -0.81762811 -0.06421559           NA
##  [34,] -1.37202703 -1.0633986981          NA  0.23022894  0.007167203
##  [35,]          NA  0.5638856243 -0.75801592 -0.70010182  2.187186956
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##  [36,]          NA            NA -0.42202933  1.25295288          NA
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##  [38,]  1.83313138 -1.1443513121 -0.45833442 -0.60826068  2.026777722
##  [39,]          NA            NA  1.62114594 -0.34653094 -0.833868339
##  [40,] -1.06048504 -0.4351141416  0.06663947  0.21551030  0.446185169
##  [41,]  0.47138025 -1.5761652215          NA          NA -1.494803474
##  [42,]  0.38222287  0.6124364438 -0.50963480          NA -0.300436265
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##  [44,] -1.20298892 -0.0002499339 -0.74724033          NA          NA
##  [45,] -0.27554690  0.7703961412  1.19720032  1.51177590          NA
##  [46,] -0.66075721            NA          NA          NA -0.292664095
##  [47,]          NA -0.8438896869          NA -1.28555451  0.583813684
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##  [49,]          NA            NA          NA          NA  0.355916851
##  [50,]  0.30900382            NA -1.04563983  1.53835590          NA
##  [51,]          NA            NA          NA  0.89073351 -0.798786446
##  [52,]  0.49083644  0.9046993383  0.76516806 -0.79293616 -2.725183221
##  [53,]          NA -0.1261172439  1.95145357 -1.03244017  2.544501507
##  [54,]  0.44437818  0.7916647374 -0.48548306 -0.96576676  0.373401893
##  [55,] -0.70459542 -1.6732035932          NA -1.09574485          NA
##  [56,]  1.10524999            NA -1.14288288 -0.03852330          NA
##  [57,]          NA -1.6007970050          NA  0.07783161  1.999363856
##  [58,] -0.82758662  0.3712438988 -0.49506173          NA -0.374946026
##  [59,]          NA            NA          NA -0.64788113  1.045522542
##  [60,] -0.75560994 -0.7817476399 -1.62159969  0.07429355 -2.118060374
##  [61,]  0.12074928  1.1652439035  0.53419719          NA          NA
##  [62,]  0.12080242  0.0407905704 -0.01181920  1.34412612 -0.127067782
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##  [64,]          NA            NA  1.31124420          NA -0.237802892
##  [65,]          NA            NA          NA -0.22452654          NA
##  [66,] -0.74670961 -1.5003267569          NA -0.10579336  0.739152718
##  [67,]  1.08424901 -0.2651412893 -1.26230420 -0.15344359 -0.642797850
##  [68,]  0.70697549 -0.5192224019 -0.15963355  0.26900917  0.546496584
##  [69,]  0.96058582  0.7673332742          NA  0.49026402  0.329814369
##  [70,]  0.46645081  0.3411485746 -0.85245265  0.46392369          NA
##  [71,]          NA            NA          NA -0.87643990  0.741457741
##  [72,]  1.18595797 -0.4623810671  0.85767391          NA -0.643094193
##  [73,]          NA  0.6486252994          NA          NA  0.826897643
##  [74,] -0.62435363  0.3356665084  0.37243146  1.04765386  1.299026522
##  [75,]          NA            NA  1.21611617          NA -0.724041742
##  [76,]          NA -0.3140425651  0.86632018  0.69754720 -0.760321801
##  [77,]  0.11460785  0.5273093957 -0.66854162 -0.23923366  0.299053855
##  [78,]  0.33647657  0.8641090054 -0.41636481 -0.03199824          NA
##  [79,]          NA            NA          NA -1.28787732 -0.040303079
##  [80,]  0.05474174            NA          NA -1.48152555          NA
##  [81,]  0.35359455 -0.6994090404  1.92271629          NA -1.050019728
##  [82,] -0.67643757            NA  0.50388130          NA -0.428613468
##  [83,] -1.19715729 -0.6321005725  0.38580373          NA -1.179339957
##  [84,]  1.91790718            NA  1.49016233 -1.34066685 -0.309262754
##  [85,]  0.75626217 -1.7559206940  0.18553926          NA          NA
##  [86,] -0.20171486  1.7111030403 -1.86570658  0.84312997  1.423158003
##  [87,]  0.97954206  1.7089472418 -1.17051403  0.43648103  0.189125179
##  [88,]  2.19511432            NA          NA  0.92932022          NA
##  [89,]          NA -2.4442858263 -0.37179592  0.76188738  0.281869930
```

```
##  [90,]  0.27189990 -0.8584339786 -0.20420606  0.01045051           NA
##  [91,]          NA -0.9725949249          NA          NA           NA
##  [92,] -0.58484691 -0.7504561526  1.80935864          NA  0.932540951
##  [93,]  1.92518607            NA          NA          NA  0.877632360
##  [94,] -0.12904668  1.0398113533  0.07040360          NA  0.123904045
##  [95,]          NA -1.6230272523 -1.22926954          NA  1.401853956
##  [96,]          NA            NA          NA -0.96363135  1.305064630
##  [97,]  0.73042438 -0.8892151524  1.16894773          NA  1.099412078
##  [98,]  0.01193836            NA  1.23191787 -0.28583460  1.305603020
##  [99,]          NA  0.6153933887          NA -1.28701493 -1.826414892
## [100,] -0.84663686  0.7237070865          NA -1.96910973 -1.355923057
##              [,95]        [,96]        [,97]       [,98]       [,99]
##   [1,]          NA           NA  0.810072589          NA          NA
##   [2,] -0.90518520  0.218333880 -0.213709602 -0.05820136          NA
##   [3,]  1.09893263  0.214697425  2.743550721  1.19458267 -0.59258108
##   [4,]          NA -0.559625707 -1.356996206          NA -1.13899180
##   [5,]  0.66982321  0.245119874 -0.446323376 -0.10739347  1.76149100
##   [6,] -0.86391664  0.548559803 -0.395031601          NA  1.63897388
##   [7,] -0.94668896 -1.195579540 -0.993001360 -1.52065517  0.50133689
##   [8,] -1.81185646           NA -2.465912104  0.29672782          NA
##   [9,]          NA  0.227948713 -1.302350858 -0.18346065  0.46319389
##  [10,]  0.32631885           NA -1.241611392 -2.66477924          NA
##  [11,]  0.71601726 -1.252776706 -0.921496966  1.87971337          NA
##  [12,]  0.65143272           NA           NA          NA -0.77225738
##  [13,]  0.13070407  0.163721974           NA  1.88863931          NA
##  [14,]          NA  0.119107165 -0.296393614 -2.39127278          NA
##  [15,]  0.81399922 -0.351594377  1.549168905 -0.42267157          NA
##  [16,]          NA           NA -0.121456752  0.64550934 -1.17316220
##  [17,]  1.68629727           NA -0.411955880 -2.17375737 -0.63194547
##  [18,]          NA -0.396632587 -1.664212354  2.49494564  1.44567766
##  [19,]          NA -0.555683162           NA  0.24043829  0.50192687
##  [20,]  0.47342268           NA -0.196291408          NA          NA
##  [21,] -0.50567102 -0.314137138 -0.009934313          NA -0.34938071
##  [22,] -0.05197669           NA -0.599116410          NA  0.21777768
##  [23,] -1.14052544 -0.732975383  0.205132655 -0.06454398  0.68433065
##  [24,]  0.44713919           NA -0.292469190          NA          NA
##  [25,]  0.71493045           NA           NA          NA -1.26112043
##  [26,] -1.58989954           NA  0.158102514          NA -0.47779277
##  [27,]  0.50043794           NA -0.358952538  0.66188327 -0.56799490
##  [28,]  0.38912503  0.688048543 -0.995201090  0.93227719          NA
##  [29,]  1.50870066           NA           NA  1.79896642          NA
##  [30,]          NA           NA  1.170115135          NA          NA
##  [31,] -0.95911467           NA -0.664592007          NA  2.92423242
##  [32,] -0.27683224  0.707080127           NA -0.23582169  0.34273280
##  [33,] -0.68531781  0.193599811  0.149635018  0.35303974  1.14271861
##  [34,]  2.06740679 -0.524774398           NA          NA -0.30763607
##  [35,]  0.28053656 -0.901136276           NA          NA -0.76184794
##  [36,]          NA  0.883738449  2.334074560          NA -0.97338043
##  [37,]  1.15135930           NA  0.495365493 -0.46382168          NA
##  [38,]  0.05563637  0.005799946  0.651387631  0.65607924  0.55615815
##  [39,] -0.20276185  1.071824475  0.982962468  0.15584502  1.13888286
##  [40,] -0.81560498           NA -0.829937943          NA          NA
##  [41,]  1.53146462  0.780142817 -0.052103137  0.85664278  0.29279191
##  [42,]  0.26016573           NA  0.276816285  0.87708534  0.29027561
```

```
##  [43,] -1.09229845 -1.787555262          NA  0.88927082 -1.08093411
##  [44,]  0.48818182  1.319056280  0.440502833  1.39039023 -0.50331193
##  [45,]  0.54709480  0.268063684  0.143044292          NA -1.41170844
##  [46,] -0.42331408  0.484417549  0.245148606          NA          NA
##  [47,]          NA -0.113104262  0.010297616 -0.78669200          NA
##  [48,]          NA  0.917814919 -0.961729948          NA  1.14920895
##  [49,] -0.04954212           NA          NA  0.08277264          NA
##  [50,] -0.97313083  0.479770870          NA -1.99826211 -0.30893752
##  [51,] -0.49135871  1.507704485 -1.479907525 -0.28045530  1.80835691
##  [52,]  0.21777541 -1.022817555  0.851353678          NA          NA
##  [53,] -0.20823629  1.170251553  1.131415945  0.13682633          NA
##  [54,] -2.11122852  0.475918696          NA -0.87643146 -0.85830396
##  [55,] -0.49675033  1.285888183  0.610188692          NA  0.13185125
##  [56,]          NA  0.117133854          NA  0.63713300 -1.63808071
##  [57,]          NA -1.027004435  1.046939970  2.39250338  0.90012462
##  [58,] -0.62643873  1.039202373  2.594677806 -1.32139804          NA
##  [59,] -1.23356097           NA -1.157021230 -0.54308296  1.44318855
##  [60,]          NA           NA  1.511445779  0.19548732 -0.91957563
##  [61,]          NA           NA          NA  0.27791856 -1.17626056
##  [62,]          NA -2.329704882 -0.653953370 -0.46679809          NA
##  [63,] -0.05758832 -0.553578658          NA -0.30337869          NA
##  [64,] -0.99561449           NA -1.431162178 -0.79962864          NA
##  [65,]  0.04788071  0.165323784          NA          NA  0.54867723
##  [66,] -1.09021784 -2.197100733  0.202933889          NA  0.11755575
##  [67,]  1.69360689           NA  2.164536839          NA          NA
##  [68,] -0.33871605  0.470105629 -0.251361181 -0.35121018 -0.25821353
##  [69,] -0.34700130  0.443112905          NA  0.04553331 -0.77286034
##  [70,]  0.82475688 -0.656688509  0.530059976  0.89769223  0.66622161
##  [71,]          NA  1.116792419          NA          NA  1.05780780
##  [72,]  1.10593068           NA  1.212446964 -1.42911838  0.70271558
##  [73,]  0.65138482           NA          NA -0.33116141          NA
##  [74,]  0.74468442 -0.290109042          NA          NA -0.96462142
##  [75,] -0.06728044 -0.252044700  0.839669610          NA          NA
##  [76,] -1.04852320           NA          NA -0.74073387 -1.36728047
##  [77,]  0.46075324 -0.670949111 -0.391304912          NA  3.58191239
##  [78,]  0.43490636 -1.628231672  0.700585081          NA  0.02658382
##  [79,] -0.85697617           NA          NA          NA          NA
##  [80,] -0.69197042  1.378975781          NA -0.01131078  0.11887619
##  [81,]  0.59309768  0.653769970 -0.451270844 -0.19885536 -1.04428245
##  [82,]  0.36509497           NA -0.727395154  1.94939840  1.44591735
##  [83,]          NA -0.183361812 -1.675480847 -1.27153429 -0.39473196
##  [84,] -1.72183019 -0.728838025 -1.108900986  1.04875214          NA
##  [85,] -0.71080642  2.789378519          NA  1.42028047          NA
##  [86,] -0.88436011  1.384588441          NA -0.81372525          NA
##  [87,]  1.99857983 -0.497256429          NA -0.41219505  0.18926586
##  [88,] -1.11675474  1.327136357          NA -0.12842459          NA
##  [89,] -1.75818125  1.080768561  0.980656726 -0.24860719 -1.11204517
##  [90,] -0.85265238  0.330488719  1.239209871 -3.04404002  1.77201212
##  [91,] -1.28809025 -0.342700851  0.029140116 -1.15453568          NA
##  [92,]          NA  0.512930159          NA  0.29040098  1.32045126
##  [93,] -0.74424405  1.408927430          NA          NA          NA
##  [94,]          NA  1.273371833 -0.163977178  0.28381040 -0.50749022
##  [95,] -0.76880201           NA -0.221684909          NA          NA
##  [96,]          NA  0.031833793 -0.095583652  1.67088872 -0.78517822
```

```
##  [97,] -0.22039290  0.202210222 -0.855297327 -0.15359319  0.04746198
##  [98,] -1.37775844  0.201409837           NA  0.08630848          NA
##  [99,]  0.39043193 -0.808707791 -0.013459800  0.15827338 -0.05430108
## [100,]  0.07301873 -2.001144939  1.316624770  0.25104858          NA
##             [,100]
##   [1,] -0.79079603
##   [2,]          NA
##   [3,] -0.38228084
##   [4,]          NA
##   [5,]  1.11474391
##   [6,]          NA
##   [7,]          NA
##   [8,]  1.09508474
##   [9,] -1.00495759
##  [10,]          NA
##  [11,]  1.35429483
##  [12,]  1.70960012
##  [13,] -1.29627165
##  [14,] -0.50565028
##  [15,]          NA
##  [16,]  2.18615888
##  [17,] -0.59362494
##  [18,] -0.22974945
##  [19,]          NA
##  [20,] -0.65964114
##  [21,]  0.41829230
##  [22,]          NA
##  [23,] -1.16012130
##  [24,]  1.05911631
##  [25,]  0.09002293
##  [26,]  1.41863129
##  [27,]  0.17668923
##  [28,]  0.17371336
##  [29,] -1.59251380
##  [30,] -2.08005947
##  [31,]  1.92713563
##  [32,]  1.10630196
##  [33,]  2.15049126
##  [34,]  0.93854305
##  [35,]          NA
##  [36,] -0.26661607
##  [37,] -0.57323223
##  [38,] -0.75593352
##  [39,] -0.87036375
##  [40,]          NA
##  [41,]  0.73469567
##  [42,]  0.33272783
##  [43,]  0.46622018
##  [44,]          NA
##  [45,] -0.13900703
##  [46,]          NA
##  [47,] -0.04753361
##  [48,]          NA
##  [49,]          NA
```

```
##  [50,]          NA
##  [51,]  0.32969066
##  [52,]  1.15385698
##  [53,]  0.05142685
##  [54,] -1.40143178
##  [55,]          NA
##  [56,] -0.26035904
##  [57,] -0.89257558
##  [58,]  0.02028149
##  [59,]  0.65730919
##  [60,]          NA
##  [61,] -0.16612940
##  [62,] -0.43765900
##  [63,]          NA
##  [64,]  0.59905385
##  [65,]  0.26433004
##  [66,]          NA
##  [67,] -0.35873852
##  [68,]          NA
##  [69,]          NA
##  [70,]          NA
##  [71,]  1.17284199
##  [72,] -1.00020206
##  [73,] -0.65239172
##  [74,] -0.31327609
##  [75,]          NA
##  [76,] -0.39382440
##  [77,]          NA
##  [78,] -1.21197066
##  [79,] -1.21839864
##  [80,]          NA
##  [81,]          NA
##  [82,]  1.35574570
##  [83,]  0.52616448
##  [84,]  2.10517598
##  [85,]  0.37594833
##  [86,]  0.28277717
##  [87,] -1.70222608
##  [88,] -1.70447750
##  [89,] -0.02015766
##  [90,] -1.54206241
##  [91,] -0.27663424
##  [92,]  0.30564302
##  [93,]  0.62085128
##  [94,]  0.18720823
##  [95,]          NA
##  [96,] -1.51435256
##  [97,]          NA
##  [98,]  0.94662100
##  [99,]  0.59942388
## [100,]          NA
```

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

```
order(rowSums(X,na.rm=TRUE),decreasing=TRUE)
```

```
##   [1]  45  33  51  88  96  44   5  70  73 100  13  97   3  48  21  71  19  30
##  [19]  57  47  89  38  82   1  31  17  61  95  78  10  49  27  46  93  16  84
##  [37]  64  87  18  11  25  75  99  81  76  98  28  36  35  85  50  26   2  53
##  [55]  91  56  86  67  14  65  79  43  94   6  12  39  74  68   7  83  62   4
##  [73]  41   8  52  20  29  23  60  77  40  37  92  59  80  55  58  54   9  15
##  [91]  69  72  24  42  66  32  63  22  34  90
```

- 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.

```
matrix(c(apply(X,1, sd, na.rm= TRUE), apply(X, 2,sd, na.rm= TRUE)), nrow= 50, ncol=2)
```

```
##            [,1]      [,2]
##  [1,] 1.0353325 1.1646458
##  [2,] 0.9010022 0.9073436
##  [3,] 1.0145376 1.0725686
##  [4,] 0.9975635 0.9441437
##  [5,] 1.1483608 1.0075330
##  [6,] 0.9013824 0.9883095
##  [7,] 1.0161791 1.0008274
##  [8,] 1.1511727 1.0296271
##  [9,] 1.0018183 0.9230984
## [10,] 1.1943579 0.9319910
## [11,] 1.1250471 0.8979573
## [12,] 0.9594784 0.7975243
## [13,] 0.9913013 0.9345414
## [14,] 0.9944033 1.0342194
## [15,] 0.8887439 0.8849429
## [16,] 0.9695263 0.9770551
## [17,] 0.9995655 0.9279309
## [18,] 0.9450726 0.9322870
## [19,] 0.9192639 0.9662642
## [20,] 1.0469920 1.0610150
## [21,] 0.8914959 1.0479150
## [22,] 0.9664236 0.9137869
## [23,] 0.9570613 0.8721769
## [24,] 0.9009055 1.0253641
## [25,] 1.1003795 1.0011749
## [26,] 1.1106628 0.9062229
## [27,] 0.9673230 1.0367703
## [28,] 0.9374109 0.9891679
## [29,] 1.0037942 1.0119165
## [30,] 0.8127217 0.9900790
## [31,] 1.0252834 1.1024114
## [32,] 1.0966003 1.0218390
## [33,] 0.8862370 1.1506993
## [34,] 0.8855418 1.0802214
## [35,] 1.1395044 0.9813368
## [36,] 1.0352414 1.0401780
## [37,] 1.1005774 1.0617687
## [38,] 0.9549427 1.0096292
```

```
## [39,] 0.8807334 1.0444303
## [40,] 0.9727131 1.2254435
## [41,] 0.8335530 0.8430516
## [42,] 1.0784497 0.9758500
## [43,] 1.1176564 1.0627536
## [44,] 1.0263576 0.9751259
## [45,] 0.9035785 1.0514318
## [46,] 1.0013137 1.1343485
## [47,] 1.0316521 0.9378576
## [48,] 0.9169191 0.8209715
## [49,] 0.8793308 0.9787126
## [50,] 0.9368853 1.0033126
```

- 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.

```
apply(X, 2, function(x) sum(na.omit(x!=0)))
```

```
##   [1] 59 77 69 66 68 73 69 73 67 80 72 77 71 74 72 73 57 67 63 70 77 66 62 66 70
##  [26] 70 77 74 65 68 74 63 73 76 73 75 75 73 79 65 63 66 71 67 70 67 68 68 71 73
##  [51] 72 65 67 72 70 69 71 71 66 80 69 74 70 67 74 58 74 74 75 69 75 71 75 76 77
##  [76] 73 67 72 69 71 68 68 68 75 62 76 73 73 68 65 70 69 64 75 79 70 70 68 63 71
```

- 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
```

```
## starting httpd help server ... done
```

```
split(X, col(X))
```

```
## $`1`
##   [1] -0.60323904          NA -0.38766840  0.97484739  0.89984131 -0.95826045
##   [7] -2.70125230          NA          NA          NA -0.27076307  0.84588359
##  [13] -0.99514342 -0.92397820          NA  0.17536346          NA  0.25524864
##  [19] -1.20585327  0.08709296 -1.32634662          NA          NA  0.11555107
##  [25]          NA -0.64499227  0.59590493 -0.57987868          NA  0.52067781
##  [31]          NA          NA -0.01826712          NA          NA -1.73247750
##  [37] -1.77492506  1.18912250 -0.13978557          NA          NA          NA
##  [43]          NA -0.37901502  0.77552444 -0.37082682 -0.60964948  0.52222880
##  [49]          NA          NA          NA          NA  0.54296472 -0.47484436
##  [55] -0.79910161          NA  0.23525884          NA -0.75637659  0.06945601
##  [61]          NA          NA          NA  0.55122812 -0.84248477  0.31123923
##  [67]  0.65118348          NA          NA  1.28235635  0.41783831 -1.10001238
##  [73]          NA -1.24308939          NA  1.00842726  0.13617486 -1.28324358
##  [79]          NA -0.33828602  0.12874895 -0.80228101 -0.72709484          NA
##  [85] -0.93590714          NA  1.52605742 -0.85186837          NA -1.38575429
##  [91]          NA          NA -0.74678605          NA  0.71178770  1.27641842
##  [97]          NA          NA          NA -0.03633307
##
## $`2`
##   [1] -2.28250639 -1.00001444 -0.14545257          NA -0.93535199 -1.15533029
##   [7] -0.21293633 -0.04863960          NA  0.31929624  0.29968745 -0.18727400
##  [13]  0.67874630 -1.00735343  0.28722245 -0.38931757 -0.35285390 -0.82904204
##  [19]          NA  1.79660293          NA  1.14354839 -0.98477577 -0.33548251
##  [25]  0.87046759  0.97342360          NA  0.09634652  0.55014575 -0.71305433
```

```
##  [31]  0.62425647  0.22863143 -0.08474477 -0.88037517  0.17054267  2.73412662
##  [37] -0.12343598 -0.14438405  0.98860520 -0.12214132 -0.94367721  0.52393243
##  [43] -0.83424566          NA -0.19068824          NA  1.43011493          NA
##  [49]  2.36560028 -0.02362587          NA          NA          NA  0.76054628
##  [55]          NA  1.17213333 -1.23601572 -0.95722233 -0.71197846          NA
##  [61] -1.46518873 -0.61781835 -0.70004931 -0.71981529          NA          NA
##  [67]          NA  1.99681429          NA          NA          NA -1.57046194
##  [73] -0.06326678          NA -0.81614124  0.19596097          NA  0.05845737
##  [79]  0.16606389  0.21474699 -0.86930122          NA  0.44866305 -0.03446098
##  [85]  0.83545794          NA -1.36593732 -0.38368925  0.93706788  1.56789810
##  [91]  1.07968400 -1.53683441  0.43702530  0.03533648  1.36748847  0.73771704
##  [97]  1.74487583  1.94502418 -0.61237216 -0.80851813
##
## $`3`
##   [1] -1.26564015 -0.34360776  0.63355906          NA          NA          NA
##   [7]  0.07280230          NA          NA          NA -0.21609826          NA
##  [13]  0.12123073          NA  0.40797570  0.42973318  0.03443224 -1.33672006
##  [19]  0.57532133  0.49068584 -0.52353615 -0.62425639 -1.15429609          NA
##  [25] -0.49816094 -0.38908323 -0.78807954  0.15215914 -0.09018631 -0.27723764
##  [31] -0.50458870 -1.56765730 -0.69550643 -0.14439020          NA          NA
##  [37]  1.05511566 -0.54059367  0.41205916  1.20836368  0.91024032 -0.90879655
##  [43]  0.74605089  0.07077808  1.59293866          NA          NA          NA
##  [49]          NA          NA -1.96364161 -1.00693777  0.89281988  0.23976078
##  [55] -0.20959990 -1.39445435          NA          NA  0.17148385          NA
##  [61]          NA -0.30868939 -0.10920170          NA -0.97205065  0.99331359
##  [67] -1.29153023  0.17764347 -1.29460731          NA  1.72937249 -0.67618591
##  [73] -0.74111112  1.50098874  0.25583836  1.12601133          NA -0.55825263
##  [79]          NA          NA  0.28077395 -0.94510175  2.62563458          NA
##  [85]  1.50711913 -0.44601637 -1.68360794 -1.89321103          NA          NA
##  [91]          NA -0.25851211          NA          NA -1.95207615 -0.01834823
##  [97]  0.37905358  0.49062266 -1.86647330  0.07879086
##
## $`4`
##   [1]  1.7575390489            NA  0.8022355413 -0.3100327059            NA
##   [6] -0.7841679908 -0.6504311482 -1.6396621074            NA            NA
##  [11]            NA  0.5829805034            NA -0.0640108084            NA
##  [16]  0.7728990261 -0.8116417268  2.0685291443            NA -2.0091433038
##  [21] -1.2821388635 -2.1059756951 -1.6245145067  1.0454221569            NA
##  [26] -0.0730878986            NA -0.8127603353            NA -0.5335140279
##  [31] -0.1560993714  1.2852197337  0.5127302368  0.0713252552            NA
##  [36]  0.1222355501            NA -0.7651098077            NA  1.9237017005
##  [41]            NA            NA  1.5627633111 -0.2264299616            NA
##  [46] -1.0569037383  1.3278067246 -1.3811787609 -1.2785649049            NA
##  [51] -0.6772396701 -0.8047058505 -2.0977000019            NA  1.0553185471
##  [56]  0.6287026538  1.2320460650 -1.1170099404            NA -1.4257767993
##  [61]            NA  0.6638318239 -0.5270691643            NA            NA
##  [66] -0.0850710934 -0.1447936030 -0.9238963918 -1.6024097369 -0.4585313187
##  [71] -1.4831523353 -1.0663088905 -1.5672181806            NA            NA
##  [76] -0.2641873155            NA  0.8261259380            NA            NA
##  [81]  1.5559217343 -0.1703496860  0.5323060112            NA  1.2315794797
##  [86]            NA  0.0004538922  0.9447321847            NA            NA
##  [91] -1.2894483995            NA  1.6006982238  1.2279850342  0.0841295500
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##
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## $`5`
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##  [13]  0.85752532 -0.66649876  1.03625517  0.92774489 -0.01576986  0.47887912
##  [19]  1.36611116          NA          NA  0.97175926          NA          NA
##  [25]  1.84306188          NA  2.14341470 -0.67627386 -1.85240023  0.15668408
##  [31]  0.97885472  0.24251962  1.19916120 -0.11365648          NA          NA
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##  [43]  0.45988130          NA  0.79585045  1.05945202          NA -0.87860984
##  [49]          NA  0.29022177  0.61481846  1.80948550  1.28263251 -0.65726822
##  [55] -0.72522771 -0.05715118          NA -0.20276048          NA          NA
##  [61]          NA -0.30695358  0.01032172 -0.06446864          NA          NA
##  [67] -0.60273649 -0.60448544  0.40054521          NA -1.40635878  0.89426843
##  [73]  0.89222023  0.28967159  0.70986593  0.80473755          NA          NA
##  [79]  0.57080127 -0.95692153          NA  0.56810744          NA          NA
##  [85]          NA  0.25052457  1.36037351  0.77720112  1.72496016          NA
##  [91] -0.71754329          NA          NA  0.30349631          NA -0.33015869
##  [97]          NA -2.04329172          NA -0.29410610
##
## $`6`
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##   [6]  0.238253221 -1.697588711  1.692673566           NA -1.903839093
##  [11]           NA           NA -1.408654424  0.916562813 -0.437604298
##  [16] -0.893572859           NA           NA           NA -0.185531048
##  [21]           NA           NA -1.999606476           NA  0.189920382
##  [26]  0.200613024           NA  0.909493061           NA  0.218201960
##  [31]  0.567512394 -0.246343005 -0.338768796 -1.547752149           NA
##  [36] -1.280445511 -0.008704457 -0.302366725  0.067944043 -0.263151193
##  [41] -0.892770383 -0.303322417 -0.836279511 -0.538064459  2.217176286
##  [46]           NA  1.122154551  0.407437129 -0.155938685           NA
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##  [61] -0.417325197 -0.474270918 -0.057212353           NA -1.770405829
##  [66]  1.777218599 -0.255324434 -1.538566978  0.703232040           NA
##  [71]           NA -0.266863371 -1.068858759  0.302524887  1.019338068
##  [76] -1.448057292 -1.252568892  0.682856184 -0.207330687           NA
##  [81] -0.789423783 -1.862727515           NA -0.425534417 -1.721959918
##  [86]  0.454607518  0.279087617  0.462206419           NA -1.067175378
##  [91]  0.567144460 -0.039925065 -0.197347849 -0.723853793  0.425103757
##  [96]  0.806536743           NA  1.314196512           NA -0.096237925
##
## $`7`
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##   [6]  0.146771968           NA  1.018843828 -0.928735084  1.073578233
##  [11]  0.066858649 -0.543295600  0.340948479  0.191790879 -1.323799079
##  [16] -0.640640451  0.220791552  0.356474186           NA -1.494744418
##  [21]           NA           NA  0.009086448  0.247483409  0.770541940
##  [26] -0.498666158 -0.319681548           NA           NA           NA
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##  [36]           NA -0.316343452  0.964529165           NA  1.575296706
##  [41]  0.120110727           NA -0.355569636  0.378403940           NA
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##  [56]           NA -0.311747374 -0.751839883           NA  0.290007218
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##  [61]           NA -0.963859016  0.138048029  0.118878984  0.647666736
##  [66] -1.066886878 -0.008292980 -0.279039008  1.469771449           NA
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##  [76]           NA -1.015171857 -2.081595809  1.982303785  1.016171946
##  [81]           NA  0.379510914  0.156619776           NA -0.030730206
##  [86]           NA  0.628250717 -1.298060139 -0.296498475  0.733379711
##  [91]  1.153747063           NA           NA           NA  0.676638727
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##
## $`8`
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##  [13] -0.90442773 -0.10300731          NA          NA  0.08202100 -1.98203869
##  [19] -1.35598090  1.34546019 -0.30428396 -0.80953550  0.56488064 -0.29786071
##  [25]  1.73214656  0.99668364          NA  0.09629569  1.34077568          NA
##  [31]  0.15139459  0.08678423          NA  0.82835602          NA -0.55787685
##  [37] -0.24277989  1.87704452 -0.27599426 -0.71110904 -0.20538582 -0.47547169
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##  [49] -0.92153336  0.70077607  0.45207966  0.94628465          NA          NA
##  [55] -1.37423607 -0.08880470 -0.34320548  0.81927479          NA  0.68094592
##  [61]          NA  2.43014147  0.58782034  1.26045653 -1.75855822 -0.63726886
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##  [73] -0.73269190          NA  1.13836538 -0.43010418 -0.87469130  1.35237228
##  [79]  0.70715379  1.34626830  0.03473249          NA -0.44069424 -0.21530129
##  [85] -0.32025481  0.64801155  1.45661772  1.44602532          NA          NA
##  [91]  0.02609826 -0.01371731 -1.01032639  0.04264334  0.21370103          NA
##  [97]          NA  0.42725048          NA  0.57375722
##
## $`9`
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##   [6]           NA  2.334653285           NA -0.281048236  0.728063508
##  [11]  0.357315912           NA           NA           NA -1.525688413
##  [16] -1.365930620  0.390185632 -0.092715389 -0.733544796           NA
##  [21] -1.202261264 -0.156653986  0.311369645  1.089126649 -0.141505921
##  [26] -0.284490969  0.241516351  0.938814950  0.293687126           NA
##  [31]           NA           NA  1.738878000  0.386006837  1.913254895
##  [36]           NA -0.294516707  1.284969410 -0.009844692 -1.130771972
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##  [46]  0.635899828           NA -0.286015522  0.407828594           NA
##  [51] -1.979464112  0.721101413           NA  0.182068879 -1.583763352
##  [56] -0.572533421           NA -1.150208159           NA           NA
##  [61]  1.245581983 -1.119472482  0.019854972  0.457384190           NA
##  [66]  1.934887930  0.276307026  0.068212110 -0.739909198  1.141282588
##  [71] -1.930601529           NA           NA           NA -1.163138516
##  [76] -0.991804326 -0.033252753 -0.355946040  0.273740963 -0.577340510
##  [81]  0.591554007  1.090341707  0.837349918           NA           NA
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##  [91]           NA -2.663976172           NA           NA           NA
##  [96]  0.765880972           NA           NA  0.985396613  0.958160818
##
## $`10`
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##   [6]           NA  0.336008006           NA  1.515790504 -0.058331844
##  [11] -1.326076676 -1.397338104  1.664697559           NA  0.719075756
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##  [16]  0.339115204  0.829060674 -0.970969290 -0.084673842          NA
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##  [31]  0.101117028  0.796049965  0.003501159 -1.127636006  0.754551651
##  [36] -0.958395478 -0.042727136 -0.930335318          NA -1.115647933
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##  [46] -0.787446609  0.885469060 -1.317212890 -0.224057362  0.343266502
##  [51]          NA  0.084634237          NA          NA  1.500833942
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##  [71] -0.045307888          NA  1.131439316  0.589169717 -0.534209639
##  [76] -1.203326257 -0.046493107  0.427975620 -0.821756020  0.803974132
##  [81] -0.532826588  0.162530830          NA -1.324489341  0.497455667
##  [86]  0.857947276          NA  0.507883443  1.051841176 -1.271616421
##  [91]          NA  0.826929478          NA -1.042474414  1.903341217
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##
## $`11`
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##  [11]          NA -0.217471123          NA          NA -0.552009136
##  [16] -1.126933303          NA          NA -0.263465825  2.894848541
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##  [76]  0.262127374 -1.415325597 -1.103158398          NA -0.915396682
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##
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##  [13]  1.16728396 -0.28559233 -1.08764074          NA -0.78013980 -0.48346553
##  [19]  0.20075361  1.10123518  0.44466344  1.26840555  0.84554993  0.49096788
##  [25] -0.69132017 -0.39283415 -1.24534691 -0.13626134 -0.19649398  1.85338589
##  [31]  1.21658360 -0.76381754          NA -0.54244827          NA  0.30240975
##  [37] -0.92344234  0.07378605  0.45876841          NA          NA  1.03488952
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##  [67]  2.20900170  0.21433446 -1.59746763          NA          NA -0.21353424
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##  [79]          NA  1.05845614 -1.87179149          NA  0.44606186 -0.53737235
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##
## $`13`
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##   [7]  0.55426881 -1.33371385 -0.58848800 -0.07092519          NA          NA
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##  [19] -0.77962634  1.21168697  0.30487003          NA          NA          NA
##  [25]  0.85405485 -0.30245139          NA -1.04028753 -0.15293819 -1.25379942
##  [31]          NA -2.45979806  0.88021200          NA          NA          NA
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##
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##  [61]          NA  0.07899017 -1.46116033  0.56941306 -1.75162266  0.36930659
##  [67]          NA  1.46414869 -0.36187209          NA  0.51313489 -0.44224997
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##
## $`15`
##   [1]           NA  0.064816865 -0.263030765  1.702356450  0.682009132
##   [6]           NA -1.607322425           NA  0.965475641  1.380078965
##  [11] -0.048124173 -1.360415717  0.029602698  2.212302349  0.653077258
##  [16]  1.017244979 -0.291606619  1.587182394 -0.183600033  0.582053126
##  [21]  0.163960470  0.882356130  0.641967572  1.010919116           NA
##  [26]  1.114609104 -0.920768185           NA -0.956242334 -0.276709833
##  [31]  0.846827934 -0.175012503  0.110665192           NA           NA
##  [36]           NA -0.324793985  1.714228162           NA -0.092983384
##  [41]  1.155964602 -0.358276208  0.864408540  0.642370229           NA
##  [46] -0.681211599 -0.345275896 -0.674940562  0.302161588  0.654512499
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##  [51] -0.217941174 -0.614245630          NA -0.454255759 -1.908320712
##  [56] -1.430985823  1.684697319  0.036476214  0.362303808  1.804066726
##  [61]          NA -0.497138761 -1.422763351  0.849196843  0.405507184
##  [66]  0.017803698 -0.118053106 -0.123405739 -0.148104694          NA
##  [71]          NA  0.594556870          NA  1.801300981 -1.302073404
##  [76]          NA           NA  2.000033964 -0.231962018          NA
##  [81]  1.005418210           NA  0.759181341  0.891959027          NA
##  [86]          NA -1.045826512 -0.025981544  1.466905912          NA
##  [91]          NA  0.925263363          NA -0.002928912          NA
##  [96]          NA           NA  0.154793524          NA  0.103760913
##
## $`16`
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##   [7]  0.83045682          NA  0.39724701  0.16043721          NA -0.14767262
##  [13]          NA -0.03535783 -0.09452799          NA -1.50119268 -0.51754358
##  [19] -0.16150318  0.37276565          NA  0.80773049  2.03454033          NA
##  [25]          NA -0.51489529  0.12059170 -0.73469430  1.06966856  0.37800429
##  [31]  1.69898277          NA -1.40606890 -0.80002839 -0.84501361 -1.24056320
##  [37]          NA -1.48593091 -1.68503425  1.07180935          NA -1.29697952
##  [43]  0.61967788 -0.38496997 -0.13843634 -0.94034074  0.86729136          NA
##  [49]          NA          NA          NA  0.38469471 -0.13590930 -0.17525751
##  [55]          NA -0.67443440 -1.57447446 -1.10432322 -1.14605152          NA
##  [61] -1.53964590          NA -1.84973300  0.61939692  0.27385193 -1.09264145
##  [67] -0.19809089          NA -0.86558904 -2.54037150  0.51994562 -0.54130853
##  [73] -0.29810814          NA  1.85502691 -0.11212237  0.74610627  0.10659251
##  [79]          NA          NA  0.17840147 -0.89095824 -0.72232407  0.37554051
##  [85] -1.63501825  0.90971706  0.45490458  0.46990339 -0.69230712  0.64912301
##  [91] -0.66641933  0.19327744 -0.05955108          NA  0.02450252          NA
##  [97]  0.10476089 -0.45378613  1.04016232          NA
##
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##  [11]          NA  1.295072950 -0.252351931 -1.363968263 -1.304588909
##  [16] -0.850957807          NA          NA          NA          NA
##  [21]  0.250503788 -0.911253817 -0.158201001          NA          NA
##  [26]  1.531895692 -1.690441536  0.229126875  0.127951826 -0.690662308
##  [31]  0.318721673 -0.107871614          NA          NA          NA
##  [36]          NA -1.061363239  0.261969242  0.407025890  0.298194361
##  [41] -0.743302508          NA          NA          NA -0.153949599
##  [46]  1.104256572  2.029296119 -0.916606379          NA -0.958482386
##  [51]  0.682639576 -0.007942688  0.316239949          NA  0.016438309
##  [56] -0.650588093          NA -0.915640052 -0.956933565          NA
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##  [66]          NA  0.983782747          NA          NA -0.184193836
##  [71]  0.261798108          NA  0.177771256          NA          NA
##  [76]  0.758224036  1.354748483 -0.768443172  0.084011401          NA
##  [81]  0.782619233          NA  0.117130038  2.025063911  0.354150566
##  [86]  1.165372943          NA  1.271608912          NA          NA
##  [91]          NA          NA  1.108021297          NA          NA
##  [96]          NA          NA          NA -0.257383789  1.131282325
##
## $`18`
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##   [7]          NA  0.08899752          NA  0.45197706 -0.57936538  0.52948322
##  [13]          NA  0.07962415          NA -1.65057837          NA          NA
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##  [25]  0.45392249          NA  0.26251613 -0.58690465  0.53878958          NA
##  [31] -0.33668883          NA          NA -1.28314603 -1.04735669  1.31880636
##  [37] -0.25312325  0.03447377  0.93155233 -0.06308928          NA  0.44797875
##  [43] -1.08855271 -2.16419259  0.01118042  0.21476061 -0.50707187 -0.65524993
##  [49]          NA  1.21652250 -1.29662792          NA -2.01972273  1.72911854
##  [55]          NA -0.37834501 -0.31411543 -0.52974444  0.65849999          NA
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##  [67]          NA  0.11984357          NA  1.64914303 -1.23461445          NA
##  [73]          NA  0.93514209  0.06672959          NA -0.43986803  0.85736974
##  [79] -0.06524469 -1.32845155  1.22781125 -0.96532571 -1.65709582  1.19080043
##  [85]          NA          NA          NA  0.24476416 -0.71137193 -2.12026837
##  [91]          NA -0.44450850          NA -1.01971446  0.38945097 -0.49716717
##  [97]  0.47301535          NA -0.05229754 -0.90170475
##
## $`19`
##   [1]         NA -0.6797592 -2.4935888  1.6572623  0.9579515  2.6067023
##   [7]  0.5843483 -1.1249143  0.9788060         NA -1.6677695  0.8999942
##  [13]  0.2811087  0.5126413 -0.3895997         NA -0.7798902  0.5543847
##  [19]  1.2005610  0.3809890  1.5284269  0.4407328  0.3355884         NA
##  [25] -1.2395728 -0.1340756  0.3572390         NA  0.4268761 -0.7668176
##  [31]  1.1501052  1.1085775  1.5113787  0.2185615 -0.8532678 -1.5112155
##  [37]         NA         NA -0.2803568  0.7278359  0.1229819         NA
##  [43]         NA -0.5675899  0.3479595  0.1301298 -1.3093075 -1.5181565
##  [49]         NA -1.7059619         NA         NA -0.5967614         NA
##  [55] -0.6115643         NA         NA -1.3101980  0.4917632         NA
##  [61]  0.7277186         NA -0.1410245         NA  0.4289595  1.8799975
##  [67] -1.4371386 -0.3699327  0.3513479         NA -0.1155286  0.8758361
##  [73]         NA         NA         NA -0.7591005         NA  0.1368217
##  [79]         NA         NA         NA  0.4184062         NA  0.8724225
##  [85]  1.1943828         NA         NA -0.5574450         NA         NA
##  [91]  1.3931538         NA         NA  0.9991517  1.1395730 -0.8784674
##  [97]         NA         NA         NA         NA
##
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##  [16]  0.031633523 -0.412915455 -0.368598787 -0.226469920  0.250809139
##  [21] -1.195036922           NA -1.213087047 -0.392738663           NA
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##  [36]           NA -0.167684976 -0.888953189 -1.137416060           NA
##  [41] -0.432733686  0.094641018           NA  0.615368393  1.015817457
##  [46]  1.354097072           NA  1.567940067           NA -0.179571149
##  [51]  0.853434723 -0.288728132  1.718357375 -2.115073284  1.481561041
##  [56] -0.065671867  1.445470139           NA           NA           NA
##  [61] -0.918419723  0.576824448 -0.257141722  0.184152497 -0.194415982
##  [66]  0.458226093  0.951804361 -1.230329140 -0.059706425  0.431079972
##  [71] -0.128740991           NA -0.169420945 -1.704377801  1.758507055
##  [76]  0.084817339 -0.834053309  0.250050880           NA -0.300053520
##  [81]           NA           NA -1.728226471           NA  0.745577685
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##  [86] -0.435649415  1.263419395 -0.287162457  0.380513571 -0.218274451
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##
## $`21`
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##  [13]  0.14296072  0.52344768 -0.66014677  0.59219410          NA -0.21757745
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##  [25] -1.60522855  2.22021243  0.06046159 -0.92236518  1.51302537  1.11561421
##  [31] -0.71136766          NA          NA  0.55724144          NA  0.50698327
##  [37] -1.90775449 -0.96552769          NA          NA -0.13511058          NA
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##  [49]  0.12359625 -0.46587435 -0.63468059          NA          NA  0.40797613
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##  [61]  0.49532017  0.19469204 -0.55647498 -0.72948124 -0.11671149 -1.13880698
##  [67] -0.86091257  0.71535131  0.33080415  1.12554098  1.09513278  0.10481736
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##  [85] -0.36949181          NA  1.10856105  0.54735661 -1.39137168          NA
##  [91]  0.06755220 -0.08817854 -0.22120120  1.19835428  2.82748572          NA
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##  [21]  0.555435397 -0.877566568           NA -0.929797142 -0.201031982
##  [26]  0.813472518 -0.468245485           NA  0.904945844  0.148337682
##  [31]  0.231405061  0.321582768  1.259528584  0.342294954  0.786122649
##  [36]           NA           NA  0.446455703 -0.988059340  0.150055771
##  [41]  1.677102634  0.157646298           NA -0.757499921 -0.832075414
##  [46]           NA -0.235842862  0.273809547 -1.593558667           NA
##  [51] -1.503043033  0.272788962 -0.811836194           NA           NA
##  [56] -0.687313061           NA -0.207470483  0.001216726 -0.930283645
##  [61] -1.752404563  0.405414092  0.115848137 -0.511496188           NA
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##  [71]  1.325035891  0.395235638           NA  0.088743551           NA
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##  [81] -0.379329540           NA           NA           NA           NA
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##  [91] -1.376684465           NA           NA  2.328747250           NA
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##
## $`23`
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##   [7]          NA -0.35877188          NA -1.62168145          NA  0.67849564
##  [13]          NA -0.18037819  0.95387558 -0.85954749  0.29272250  0.13399419
##  [19]          NA -0.93583931 -0.36599735 -1.04849965  0.48326085          NA
##  [25] -1.48667611          NA          NA  0.29262513          NA          NA
##  [31]          NA          NA -0.96789231 -0.41067363          NA          NA
##  [37]  0.73116871  2.51733119          NA -0.47867954 -0.73853362          NA
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##  [49]          NA  2.40682877          NA          NA -0.68030297 -1.33093187
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##  [79]  0.13322236          NA  0.59751728          NA          NA          NA
##  [85]  0.94426140          NA -1.08932573 -0.76766586          NA  1.05783603
##  [91] -1.10100357 -1.21700617 -0.82105236          NA -0.03165016 -0.05276838
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##  [16]           NA  0.713843080           NA -1.861811677 -1.207777809
##  [21]  1.335266291  0.435047249           NA -1.380469496  0.982410843
##  [26]  0.348743579  0.196154936           NA -0.473168659  1.491234207
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##  [41]  0.182169225  0.214021683           NA -0.426697342 -0.880550166
##  [46]           NA           NA -0.085537261 -0.426865858           NA
##  [51]  0.794561986 -0.447935895           NA -0.001930314  0.241347555
##  [56] -0.627948343 -0.696296829  0.745222174           NA -1.025334521
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##
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##  [13]          NA -0.71884280 -0.24507925 -0.99187331  1.09638670  1.68288749
##  [19] -0.76659646  0.76581121          NA  0.68519361 -0.02434805 -0.61827124
##  [25] -0.04685714 -0.64869340          NA          NA -1.25316049 -0.65173229
##  [31]  0.14928597          NA          NA -1.80818190 -1.43884741          NA
##  [37] -1.58105308 -1.33956708          NA  1.63795737          NA  0.76854199
##  [43]          NA          NA  0.86499882  1.63443738          NA  0.61253635
##  [49]  0.23035353  1.22110615  1.55601537 -1.37686590          NA  0.50674589
##  [55] -0.67290674 -0.01578708          NA          NA  1.39936009          NA
##  [61]  0.81259055  0.66487833 -0.23902597  0.10745252 -0.58318024          NA
##  [67] -0.75750169  0.08285130  0.57854350          NA  0.04804784          NA
##  [73]          NA  0.91283239  0.76707842          NA          NA  0.54595807
##  [79] -0.54118999 -0.48356658          NA -0.43546964  0.53733431  0.07659096
##  [85]  0.52166669          NA -0.68714157          NA -1.82814470 -2.73809417
##  [91]          NA -0.48530644          NA -0.59349667  0.64039846  0.02909048
##  [97]  1.37990378 -1.10689180          NA  0.25078314
##
## $`26`
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##  [13]  0.03083857 -0.54357932  1.23609097 -0.94231774 -2.40923578          NA
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##  [31]  1.49817073          NA          NA -0.30068125          NA -1.06825052
##  [37] -0.25653961  0.66621361  1.57267288  0.36284220          NA  0.99480986
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##
## $`27`
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##  [11]  0.497476923           NA  0.683689372           NA           NA
##  [16] -0.012485281  1.508656817  0.129769939  1.524295731  0.452815173
##  [21]  0.723823631 -1.798137610           NA           NA           NA
##  [26] -1.494836068  1.022405869 -0.263857778 -2.022676930  1.269432025
##  [31]           NA  2.449102294           NA           NA  0.565212064
##  [36]  0.725707834 -0.913418772 -0.197091235           NA  2.236365827
##  [41]           NA -1.272238322  0.055770136           NA  0.233557539
##  [46] -4.240691328  0.166374065  0.860006011 -0.926727108  0.087392833
##  [51]  0.015732761 -1.036915609 -0.739740083           NA  1.280028291
##  [56] -1.202840360  1.905252917 -1.353321374  0.046409204 -0.610206410
##  [61] -1.718733596 -0.292106673  0.441241174  0.607425675           NA
##  [66] -0.691107049  1.219842442 -0.233937428 -0.768425828           NA
##  [71]  1.699456831  0.856314440 -0.214824442  1.400663680 -0.010182883
##  [76]           NA  0.148242215           NA           NA  1.164097211
##  [81]  0.229223571 -0.002294502 -0.717781669 -0.919089227           NA
##  [86]  0.872956957 -0.992134542           NA -0.215554413 -1.137846177
##  [91] -0.710309952           NA -0.883878838 -1.125808242  1.070855921
##  [96]  0.584799472  0.330066058 -0.027557976  1.143127821  0.757138413
##
## $`28`
##   [1]  0.06653454 -0.61704787 -1.43493105 -0.81649259  1.42768507 -0.19173600
##   [7]  0.21656802  0.75625430 -0.21269478 -1.69393556 -1.70205662          NA
##  [13]  2.87686742          NA  0.02421634          NA  0.42951277 -0.20833433
##  [19] -0.26873173  0.26604531          NA  1.49517542          NA -1.25813677
##  [25]  0.92946259 -1.99851611 -1.16666389  0.16017186 -0.89769664          NA
##  [31]  0.52751515  1.45150437  0.62025861          NA          NA -0.57832479
##  [37]  2.41962857 -0.73731512  1.93801480          NA -0.59988685 -2.40001740
##  [43]  1.14245568          NA          NA  0.10375112  0.23000378 -0.25776510
##  [49]  0.27866632  0.44328180 -0.02043039          NA  0.79996294  0.12035547
##  [55]          NA          NA -0.22949556  0.39734235          NA          NA
##  [61]  1.64301002 -0.64313938          NA  1.17023083  1.02826658 -1.27573818
##  [67] -1.13225480  0.72346631          NA  0.03291717  1.63023893 -1.05223745
##  [73]  0.46917364 -3.54930611 -0.08877892  2.25646725          NA  0.52417587
##  [79]  0.61296935 -0.28432122          NA -0.21967067          NA  1.94418456
##  [85]  0.05745569 -0.25403267 -1.87654640 -0.81198576  1.38972493 -1.02354226
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##  [91]          NA          NA          NA -0.09352843  1.27226528 -0.08845753
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## $`29`
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##   [6]           NA  0.822255037  1.067994063  1.131027526  0.626043342
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##  [21] -0.200935150           NA -0.436443836           NA  1.169520091
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##  [31] -0.288128619           NA  0.026868899 -0.252250958 -0.968632125
##  [36]           NA           NA  0.202267840  1.381742506 -1.754358413
##  [41] -0.832836519 -0.696976100  0.265045243  0.509055281           NA
##  [46]  1.878520771  0.099704328           NA  0.812447874 -1.518206759
##  [51]           NA  0.734350610 -0.929249183           NA           NA
##  [56]  0.058584218           NA -1.742111254 -1.543843635  0.449846697
##  [61]  1.135413921 -0.410519250 -2.902908542           NA           NA
##  [66]           NA -0.472528939  0.474721089  0.358874509  0.318889857
##  [71]           NA           NA           NA -1.246204259 -0.575820036
##  [76] -0.140310548           NA -0.647831004           NA  0.890043823
##  [81]  0.002078771  0.157819067 -0.548973971           NA -0.536427918
##  [86]           NA -0.673301494           NA -1.000678826 -1.427828385
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##  [96]  1.679461381  0.032400118           NA           NA  0.309697074
##
## $`30`
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##   [7] -1.38257644          NA          NA  0.81663635          NA -0.14470067
##  [13]  0.26785033 -0.36379517 -0.65502948          NA  0.15841108  1.07098175
##  [19] -0.81969674  0.36601314  0.33717775 -2.05346405 -0.81514767  0.21079912
##  [25]          NA  0.57787087  1.08995659          NA  0.05709690 -0.16278311
##  [31]          NA          NA -0.73368588 -0.64502781 -1.29270633 -1.38086180
##  [37]          NA  1.06201701          NA -0.58594205 -0.76134365  0.50638743
##  [43]          NA  2.70140223          NA          NA  0.83143602          NA
##  [49]  0.50210863 -1.06719620          NA -1.65608133 -0.33029839 -0.49620104
##  [55]          NA  0.74426821  0.50805859  0.19399252          NA          NA
##  [61]  1.16757563 -0.34488288  0.19003186  0.96393091  0.03208510 -0.44586102
##  [67]          NA          NA          NA  0.19795469  2.03006400          NA
##  [73]          NA          NA  0.94091514 -0.46867591  0.72872999 -1.08012039
##  [79] -2.58094628 -0.74112354          NA  1.48859733          NA -0.38210929
##  [85]  0.09087198  0.35639923          NA          NA -0.18442809          NA
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##  [97]          NA  0.32344041          NA -0.11379501
##
## $`31`
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##   [7]  0.94901189  1.98606534          NA -1.30342537  0.68432473  0.30550002
##  [13]  0.58738896  1.31091238 -1.86189237  0.45211863  1.72686744 -0.47656316
##  [19]  0.49347938  1.42703974  0.29647750 -0.08716115  0.56083482 -0.31896267
##  [25] -1.23870060          NA -1.46227814 -1.75792628          NA -0.18483504
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##  [37]          NA -0.48135962 -0.99077520  0.25948791          NA -1.26296553
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##  [49] -0.02583646 -0.27340972  2.46069219          NA -1.53947628          NA
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##  [55]          NA  0.65401400 -0.84583687 -0.90487968  0.19647925          NA
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##  [67]  0.92984691          NA -1.99492003  2.08784956 -0.33596850          NA
##  [73]          NA          NA -1.11589390          NA  0.65661062  1.96230535
##  [79]  0.74012330 -1.89983307  1.04384204          NA -0.54992412 -1.60948158
##  [85] -0.70875457  1.93055322  2.28144381          NA  1.37947322  0.48571809
##  [91]          NA -0.59043265 -0.30119513  1.08031985 -1.62498624 -0.47321139
##  [97] -1.85069150  0.08293861  0.26447000          NA
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## $`32`
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##   [7] -0.18298130 -0.27985263 -0.83589896 -0.30185592          NA  0.68865400
##  [13]  0.82151176          NA          NA  0.08079771  1.39473035  1.39552592
##  [19] -1.80202762  0.56024283 -1.47522925  0.57389635  1.93851312 -0.83823486
##  [25]  0.15469237 -0.13487651 -0.82165073  0.64764738 -1.32404349  0.72157411
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##  [37]  0.22729473 -1.45556644 -0.55549753          NA          NA -2.28935143
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##  [49]          NA -0.32131975          NA -0.12997969          NA  0.18926827
##  [55] -0.69714274          NA  0.77974519          NA  0.22674870 -0.43145269
##  [61]  0.59268407          NA          NA          NA -0.33710377 -0.33730020
##  [67]  0.40928172          NA          NA -2.61434554 -0.03896739          NA
##  [73]          NA          NA          NA -0.49356135          NA  0.86307542
##  [79]          NA -0.41317116          NA  0.97377150 -2.61973464 -2.01135914
##  [85]          NA          NA  0.19404648  1.25239997          NA          NA
##  [91]          NA          NA          NA  0.48020528  0.73888327  1.65972741
##  [97]          NA          NA  0.95257012 -0.65555799
##
## $`33`
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##   [7] -1.23743788          NA          NA          NA          NA          NA
##  [13]  0.51460332  0.09574759  1.42614890  0.25866728 -0.54848428          NA
##  [19]  0.41959668 -1.38109428          NA -1.11064518 -0.95592437          NA
##  [25]          NA          NA -1.02993185          NA  1.26924715  0.19696453
##  [31] -0.63325400  1.36431761 -0.33185147 -0.85159149  1.02878883  0.82128341
##  [37]          NA          NA  0.26784277  0.48468167  0.60457425 -1.56278973
##  [43]          NA -0.71327961  0.83610135  0.48729703          NA          NA
##  [49] -0.19787466  0.78633024  1.05265739 -0.69641749  2.22765931  1.28647527
##  [55]  0.24610359 -0.72989073 -0.57093983  1.92052318 -1.73058354  0.40684751
##  [61]  0.52310655 -1.16220861 -0.23820051 -1.27539294 -0.86302805 -1.66283442
##  [67]          NA          NA  0.58746231 -0.04650345  0.02172098 -0.15200862
##  [73]          NA  0.97218835  0.27985161          NA          NA          NA
##  [79]          NA          NA -0.69657049  0.32782860  0.36308819 -0.23940774
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##  [91] -0.19000047  0.31119890 -0.21868978  0.08967564          NA -0.70171383
##  [97]  1.19664993 -0.53985963  0.30668550  1.21246175
##
## $`34`
##   [1] -0.264446203  0.780895716  0.422853289  0.668549082          NA
##   [6]          NA  1.757111247          NA  0.785101536          NA
##  [11]  1.441604703          NA -0.279610378          NA  0.167797432
##  [16]  1.852272076          NA  0.346564480 -1.318446401 -0.002624604
##  [21] -0.049440510 -0.232530047 -0.188673965  0.262428282  2.415391545
##  [26]  0.954600582 -0.138712815 -0.947337670          NA  0.753051663
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##  [31]           NA -0.606144937  1.736287789 -1.523031639  0.204505854
##  [36] -1.936237909 -1.562896721 -0.503209621 -2.201206947           NA
##  [41]  0.185880060 -0.871397642           NA  1.748352302  0.448617712
##  [46]  0.355168569 -1.063270362 -0.417436407  0.064004751 -0.247673021
##  [51]  1.395474049  0.757594220 -0.163165242           NA  0.439140895
##  [56] -0.260694861  1.810764137  0.556489887 -1.987357429 -1.320380775
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##  [66]  0.088243122           NA -0.270148293           NA  0.336997209
##  [71] -0.904138982 -1.080533984 -0.042631132 -1.406271911 -0.845599284
##  [76]           NA           NA -0.012967067  1.234576976           NA
##  [81]  0.882826948  0.208972058 -0.635483703           NA           NA
##  [86] -1.097666671 -0.812404455           NA           NA  2.258992775
##  [91]  0.128485665  0.004536266 -0.131155730 -1.576425025  0.499505562
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##
## $`35`
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##   [7] -1.08128379 -2.06098533          NA  3.60252107 -1.28305557 -0.34759687
##  [13] -0.73237568          NA -0.64577637          NA -0.22865407  0.83981789
##  [19]          NA          NA          NA          NA  1.22890509 -1.26089727
##  [25]  0.34623987          NA  0.78419934 -0.59386838  0.81750656 -0.33753520
##  [31] -0.70670224          NA          NA -0.38662877  0.34125052 -0.31767619
##  [37]          NA  0.21097058 -0.51810963  0.11752465  0.18100221  0.03462273
##  [43]  1.69323927 -0.36449138 -0.57831027  0.15283093 -0.50375896  1.50711563
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##  [67] -0.03452414 -0.50888927          NA -0.95682938 -0.03927841 -1.37688101
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##  [97]  0.22796267 -0.65680454  0.95430808  0.07690333
##
## $`36`
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##  [13]          NA -1.11550339          NA  0.88146390          NA  0.80747992
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##  [31]  1.57614037 -0.05665933  0.23248657 -0.93242794 -1.81969414  0.77426970
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##  [73]  1.56079938  0.10220411  1.21617782 -1.08540205 -0.99375635          NA
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##  [85] -1.47576918  0.57522792          NA -0.58171230 -0.74437928 -1.12479509
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##
## $`37`
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##   [1]          NA          NA          NA -0.62009386 -0.25305717          NA
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##  [19]  1.94970564 -1.24802888  1.45349520 -1.12443119 -0.15017957  1.70904030
##  [25]          NA -0.45675300 -0.26868850          NA -0.02105852          NA
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##  [37] -1.43593447          NA  0.32834859  0.38118591          NA -0.63145467
##  [43] -0.34267822          NA -0.51940597 -0.20330845  1.04698402          NA
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##  [73]          NA -1.22306283  2.91633394 -0.82212674 -3.52058334 -0.61093825
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##
## $`38`
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##  [11] -1.045308190 -0.722397240  2.268340355           NA -1.115993963
##  [16] -0.547565572  0.992710527 -0.108559547           NA           NA
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##  [26]  0.120115355 -0.441247828  2.239944353  0.402061644  1.658287119
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##  [56]           NA -1.338590785           NA           NA -0.552323625
##  [61]  0.696279768  0.992856779  0.580496431 -0.299408473  1.026450360
##  [66]  1.662975971  0.543334334 -0.365758991 -0.518158649  0.266283849
##  [71] -0.336401727 -1.082360625  0.588759549 -0.150232009           NA
##  [76] -1.389833309           NA           NA  0.307828879           NA
##  [81] -0.628162240  0.531278624           NA  1.677977599 -1.082059090
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##  [91]  0.959623423           NA -0.036331591  2.424669011  1.269095141
##  [96] -0.293651994  0.008370972           NA           NA           NA
##
## $`39`
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##   [6]  0.281725283  0.387811218  0.222645953           NA -0.290006568
##  [11] -2.967963433           NA  2.146321891 -1.213332597  0.140648135
##  [16]           NA  1.413793404 -0.454815003 -0.218214734 -1.615762630
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```

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##  [66]  0.291372638           NA -1.189187460           NA -1.122603595
##  [71]           NA  0.405080726  1.277480550  0.253202905  0.692844036
##  [76]  2.175779160 -0.023679850 -0.985547671  1.026331965  0.847879934
##  [81] -1.227803793  0.070087583 -1.518330103  0.347828442 -0.720873144
##  [86]           NA -0.963005944 -0.149999375  0.700086436 -0.046979790
##  [91]  1.319568642 -0.238869843  1.426341526 -2.081725733 -0.459926110
##  [96] -1.980179151  0.156551703           NA -1.407442089  0.203809493
##
## $`40`
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##   [6]  7.925518e-02           NA           NA -1.677051e+00 -8.513355e-01
##  [11]  6.577041e-01           NA           NA -2.200265e-01           NA
##  [16] -3.222390e-02  2.445255e-01           NA -1.125249e+00  1.617747e+00
##  [21]  1.066591e+00           NA           NA -4.582416e-01 -5.236290e-02
##  [26]           NA  1.909048e-01           NA -1.333336e+00           NA
##  [31]  9.764552e-01           NA           NA  7.856995e-01  1.388295e+00
##  [36]  1.293856e+00           NA           NA -3.056056e-01 -9.363322e-01
##  [41]  1.990547e+00 -4.049518e-01  1.736087e+00           NA -9.158479e-01
##  [46]  6.012614e-02  1.119835e-01  6.023059e-01  1.144459e+00           NA
##  [51]  4.153014e-01  9.504628e-05 -1.615440e+00           NA -9.408572e-01
##  [56] -1.514310e+00  1.812110e-01  1.404750e+00 -1.202039e+00  7.187795e-01
##  [61] -2.749747e-01  1.171901e-01  6.826833e-01  2.213726e+00 -6.383614e-01
##  [66]           NA  1.285796e-01  3.612510e-01 -2.488646e-01  1.460932e+00
##  [71]  1.096214e+00           NA -6.168057e-01  1.250488e-01           NA
##  [76]           NA -1.360524e+00           NA           NA           NA
##  [81] -3.895171e-02           NA           NA           NA  2.060539e+00
##  [86]           NA -7.194513e-01  1.565185e+00           NA           NA
##  [91] -1.433070e+00           NA  8.552836e-01 -1.766073e-01 -2.405245e+00
##  [96]           NA  4.518043e-03  6.053490e-01           NA  4.295139e-01
##
## $`41`
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##   [7]          NA  1.69390786          NA  0.43968085 -1.37752468          NA
##  [13] -0.36355735  0.62480482 -1.02708789 -0.94996982          NA          NA
##  [19] -0.38025161          NA  0.97902661          NA  1.07002917          NA
##  [25]          NA          NA  0.31719058 -1.89833101  0.76239002 -0.94286896
##  [31]  0.45485410 -1.12153897 -0.14455636          NA -1.07701631 -0.19577502
##  [37] -0.86954253  0.57639346          NA -0.84890976 -0.33788125          NA
##  [43]          NA  0.69126826          NA          NA          NA          NA
##  [49] -1.57022967          NA -0.43930747 -0.17578359  0.02221016          NA
##  [55]  0.81496014  0.75452877          NA -0.15174634  0.37599600  0.51490090
##  [61] -0.10280796  0.32768766 -0.92310030          NA          NA          NA
##  [67]  0.63256938          NA  0.73420679  1.56870953 -1.56637154 -0.15590147
##  [73] -0.86914722          NA  0.02605278          NA  1.07836185          NA
##  [79]          NA          NA -0.03145319          NA  2.96803790 -0.68584337
##  [85] -1.25549384          NA -0.11165642 -0.16139169  0.72076639  1.65035788
##  [91]  1.33762557 -1.34599573          NA  0.01156473 -0.06905456 -1.48772467
##  [97] -0.64093052          NA -0.48717952  0.02801697
##
## $`42`
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##   [7]  0.77265524 -0.95728619          NA          NA -1.14615517 -1.07580240
##  [13]  0.80928457          NA -0.30088340 -1.27599095  0.70539446          NA
##  [19]          NA -1.18459459          NA  0.32404616 -0.21957019          NA
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##  [25] -0.48427037 -0.71572314 -1.25582979          NA          NA  0.82748485
##  [31]  0.72489188 -1.29503987  0.92071742          NA          NA          NA
##  [37] -0.68521110          NA  1.96051666  1.06925326 -0.46627369  0.94735517
##  [43] -0.91456716 -0.69512851  1.12876778 -0.08253335          NA          NA
##  [49]  0.57038459  0.06007001 -0.83813635 -0.99542870          NA  0.36654413
##  [55]  1.56772816  0.52150479  0.71104038  0.49331573          NA  0.61432374
##  [61]          NA  0.01538761          NA          NA  0.17221025          NA
##  [67]          NA  1.02180219 -0.75351032          NA  0.28067097 -1.47752079
##  [73] -0.39330109  1.95135086  2.64858949          NA          NA  0.61701947
##  [79]  0.36408505  0.46194875          NA  0.81283468          NA -0.37328424
##  [85] -0.41522234  0.60533019 -2.32907994 -0.29271584          NA  0.71513844
##  [91]          NA -1.26841209 -0.47186091  0.95960251  0.52517200          NA
##  [97]          NA -0.07904505          NA  0.88542241
##
## $`43`
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##   [6] -0.593635218           NA -0.200259631  1.278157804           NA
##  [11] -2.269472522           NA -0.329320951 -0.011366715           NA
##  [16] -0.199673786 -2.197786259  0.936456776  0.459662876 -0.245920327
##  [21]           NA -1.165713427           NA           NA  0.055145075
##  [26]  0.985566193 -0.552866203  0.089592307 -0.067950931           NA
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##  [36]  0.707649066  1.307128910  0.268268716 -0.685469399           NA
##  [41] -0.730248317 -1.642669911  0.453567232  1.175534375 -0.211973889
##  [46]           NA           NA           NA           NA           NA
##  [51]           NA           NA -0.040589419           NA -0.428775677
##  [56] -0.696700597  0.694679301 -0.123318422  0.260239252  0.055495182
##  [61] -1.043658788 -1.884372735           NA           NA -0.354980661
##  [66]           NA -1.128719969           NA -2.018066605  0.358913362
##  [71] -0.655981543           NA           NA  0.093909813 -0.788775672
##  [76]  0.179080626  0.294967310 -0.483568953  0.005082067 -0.289803837
##  [81]  2.095916454  0.282008567 -0.361671118 -1.842963689           NA
##  [86] -1.309030858           NA  0.140841827           NA -0.513297918
##  [91]           NA           NA -0.990019956 -1.172732261           NA
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##
## $`44`
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##  [25] -0.80321103  0.14787589 -0.14349355 -0.69880663          NA -1.05773780
##  [31]          NA  0.39623008  0.54306550 -1.08572655  0.28060229 -0.17041788
##  [37]          NA -0.08783985  0.12186193 -1.18049465 -0.34782274          NA
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##  [49] -1.11073639          NA          NA          NA  1.40570836  1.07438473
##  [55]          NA -1.34337316  0.01031055  0.86495445 -1.16270408  0.87629402
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##  [67] -0.24970944  0.46742690          NA  1.09984470 -0.30083419 -1.07797656
##  [73]  0.90671092 -0.14784007  0.56920030          NA -0.91657002 -1.64865592
##  [79]  1.91778592 -1.65645494          NA -1.58486642          NA -0.39466160
##  [85] -1.45382377          NA -0.67952847          NA  0.48266423          NA
##  [91]          NA          NA          NA -1.93909857  0.80678717  0.12538545
##  [97]          NA  0.14157833  0.61018435  2.25383996
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##
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##   [7]  0.95882653 -1.16377761 -0.62443306          NA          NA -1.62326926
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##  [19]  0.04398468  0.49078595          NA -0.62480292  0.18018860 -0.30712996
##  [25]  0.08479490  1.08871880 -0.06271565          NA -0.79892580  1.54465503
##  [31]          NA -2.15831993 -1.08269921 -1.20494312 -1.82585342  0.07118393
##  [37] -2.57937330 -1.29774415 -0.22048785  0.68188392  0.10640379  0.63197759
##  [43] -0.47051008  0.38340156  0.48464349          NA  0.96250104          NA
##  [49] -0.06311733  2.11278978          NA          NA          NA -1.37272772
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##  [67] -1.03900286  1.75525680  0.46439628 -1.08306952 -1.14081831 -0.04776086
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##  [85]          NA  0.23457560  1.41146233 -0.44916299  2.72449490 -0.47376755
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##
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##   [7] -0.76092991 -0.98619580  0.35680435          NA  0.34262684  0.03827228
##  [13]          NA  0.78931999  0.21300814  0.17632558  2.26982306  0.30997652
##  [19]  0.85647389          NA  0.27786127  0.17847456 -1.25946827 -0.66460917
##  [25]          NA  1.88962490 -0.82604830          NA          NA          NA
##  [31]  1.40150417 -1.06282930          NA  0.12985632          NA -0.27659846
##  [37]  1.47300778 -1.70023358          NA -0.58254056  0.91294711          NA
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##  [61]          NA          NA  0.16604020 -0.05632159  0.46238569  0.68134760
##  [67]  0.98983875 -0.46072780  1.89981667 -1.48223909  0.78333775 -0.67013996
##  [73]          NA  1.19082113  0.01814476  1.29848558          NA -0.49030703
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##  [85] -0.46909950          NA -0.88809114  0.60076807 -0.25165987          NA
##  [91] -0.30695167  0.62745837 -0.22405569  0.20967600  1.53668410          NA
##  [97]          NA          NA          NA          NA
##
## $`47`
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##   [7] -0.69871948          NA -1.24862519 -0.68263712 -0.81068792  0.05101477
##  [13]  0.92428049 -0.57489862 -1.00853386 -1.06358621  0.44627464  0.13357993
##  [19]          NA -0.79986998 -0.39882150          NA          NA          NA
##  [25] -0.62124291          NA          NA  0.84271463          NA  0.35886414
##  [31]          NA  0.99648928          NA          NA  1.58474763  0.26349641
##  [37]  1.18856914          NA -0.35001181 -0.63647944 -1.06678040 -1.66285985
##  [43] -1.45597830  0.57408476  0.78845970 -0.45473767  1.34204423  0.26819362
##  [49]          NA          NA  0.80521509  1.05805872          NA  0.96377668
##  [55]          NA          NA          NA -0.50134368          NA          NA
##  [61] -0.37016947  0.60619255 -1.09184237 -0.86502066          NA -0.88794672
##  [67]          NA -0.18140354 -1.42615728  2.25402006 -0.29774902          NA
##  [73]  0.63278545 -0.29640732          NA          NA  0.92539135  0.33215438
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##  [85]  0.93079929 -0.23272464          NA          NA          NA          NA
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##  [97]          NA  0.85841472 -1.02935350          NA
##
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##   [6]  0.1677366141 -1.3409090395           NA -0.2992137753 -0.8740513708
##  [11]  0.1355629729 -0.2921061663 -0.5284331509 -0.6395027511           NA
##  [16]            NA           NA           NA -0.6187784274           NA
##  [21] -1.0825970822  0.0310244847 -0.4709132677  0.1502548677 -0.1545705067
##  [26] -0.1279427014  1.4482123486 -0.3511935161           NA  0.7576678205
##  [31] -1.3209836924 -1.4874832331  0.6166413369 -0.4015105793  0.3271268946
##  [36] -0.3972759745  1.2237419067 -0.0004230341           NA -0.3682871474
##  [41]            NA           NA           NA  0.1543603773           NA
##  [46]  0.2639443036           NA           NA  1.0207667251 -0.4418488877
##  [51]  1.1198096999           NA           NA           NA -1.1386161652
##  [56] -1.1316561920 -0.7471699182  0.8094357422  1.2753975109           NA
##  [61]            NA -1.2381202283  0.1056912531           NA  0.4453285475
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##  [71] -0.9874550307           NA           NA -0.1996656130           NA
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##  [81]  1.3400865071 -0.2237291767 -0.8403290182 -0.7180189401  1.6127858075
##  [86]  0.7920485869  0.7982196583  1.4854599067 -0.3180312827 -0.7523809744
##  [91] -0.3979868507 -0.1692711735  1.3149462578           NA -1.4036310150
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##
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##  [11]  0.436506578  1.665399646 -0.712237394           NA -1.024215772
##  [16]  0.006016414  1.301811214 -0.437074748 -2.201483851 -1.218703699
##  [21]  0.899629258  0.381800164  0.965697993  0.118705919           NA
##  [26]  0.308222090  0.217960242           NA  1.608185586  0.595387451
##  [31] -1.943036351  0.774935143  0.419324984 -1.058640882 -0.137080254
##  [36] -0.209699850  0.328718755           NA -0.252982391           NA
##  [41]  1.032534263  0.341497305 -0.402482395 -0.549865918  1.172545846
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##  [51]  2.584816816           NA -0.828931108 -1.757911567           NA
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##  [76]           NA -1.041738435  0.568549391 -1.711987103 -0.043332721
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##  [86]           NA -0.185958239  1.675598898  0.044034253  0.937327407
##  [91]           NA           NA -1.288360056           NA  0.694909951
##  [96]           NA  0.972990311 -0.294741797 -1.097498568           NA
##
## $`50`
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##   [6] -0.708052379 -1.881896305 -0.429260401           NA  0.450159268
##  [11]  0.730373253  0.406316583  0.422107119  1.708083788  1.282827749
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##  [21]           NA  1.031246311           NA -0.478150498           NA
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##  [26]  1.509475339  0.390999792  0.150600340  0.075702644  0.262273191
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##  [46]           NA  0.244822852  1.276052214 -0.970971333 -0.442777133
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##  [61]           NA           NA -1.142225398  1.797181228           NA
##  [66]  0.512209168  0.097568199  2.614660188  0.741048663           NA
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##  [76]  0.013983986  0.789269681           NA           NA           NA
##  [81]           NA -0.623128498 -1.442323316 -1.397823393 -0.345622579
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##
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##  [25]          NA          NA          NA  1.78191759  1.31414296 -0.11177009
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##  [73]  0.90944810  0.42164776 -2.33201765  0.82301027 -1.26541166 -2.00861167
##  [79] -0.11805921          NA  0.32083307 -1.35771435  0.12207437  0.87637749
##  [85]  0.29336733 -1.60181835  0.22797853  2.81749213  0.31976173  0.98099558
##  [91] -0.45112020  1.22594881 -0.66607091 -0.84013086  2.56348245          NA
##  [97] -0.66777380 -0.43108232  0.54924104  1.18267709
##
## $`52`
##   [1]  1.192336e+00  1.389970e+00           NA -2.222311e-06 -1.468098e+00
##   [6]           NA           NA           NA  1.164153e+00  1.519772e+00
##  [11]           NA  1.036984e+00 -7.483260e-01  1.047322e+00 -7.967420e-01
##  [16] -4.238557e-01  1.932887e+00 -1.870569e+00           NA -5.054040e-01
##  [21]  2.642911e+00           NA           NA -9.067389e-01 -7.937572e-01
##  [26]           NA -1.566136e+00  3.128482e-01 -2.994394e-01 -4.978380e-01
##  [31]  9.479316e-01 -9.773792e-01 -7.795159e-01  1.033453e+00           NA
##  [36] -1.092477e+00           NA           NA           NA           NA
##  [41]  2.700686e-02           NA  6.423815e-01 -5.945789e-02  6.497623e-01
##  [46] -3.706285e-01  8.538266e-01  1.408731e-01  6.137518e-01           NA
##  [51] -1.112694e-01  1.476545e+00 -6.600547e-01           NA -4.115778e-01
##  [56]  1.115785e+00           NA -1.470190e+00  4.783200e-01           NA
##  [61] -3.289380e-01           NA           NA  7.134459e-01           NA
##  [66]  4.328558e-01           NA -2.268870e+00 -9.386512e-01  7.707081e-01
##  [71]  5.486159e-01 -1.104867e+00           NA  3.749119e-01           NA
##  [76]           NA  2.150469e-01           NA -1.060214e-01 -6.929795e-01
##  [81]           NA  1.056256e+00  1.470052e+00           NA           NA
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##  [91]            NA            NA  1.448891e+00  1.334849e-01  2.147639e-01
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##
## $`53`
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##  [11]  1.570340490           NA           NA  0.047640116  1.640923219
##  [16]  0.473141702  1.647422103  0.649626854  0.310472443           NA
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##  [26] -0.551893824  0.224454277           NA  0.124295364  0.121636666
##  [31]  0.754079555  0.656807253           NA  0.551428572 -0.002433055
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##  [41]  0.166411658  0.816033340  0.296546875  2.464724370           NA
##  [46]  2.116766653 -1.334323844           NA           NA  0.869165636
##  [51] -1.613938961           NA  0.188235946 -0.990818267           NA
##  [56]           NA           NA           NA           NA -0.042711151
##  [61] -1.527269118 -0.311514156 -0.473055497  1.257864467           NA
##  [66] -1.547232434           NA           NA -0.051669157           NA
##  [71] -1.269880673  1.483274349  0.055748120 -0.628783799  0.775707464
##  [76]           NA -0.518111054 -0.557365993 -0.826405154           NA
##  [81]  0.274678728           NA           NA -0.882506546  0.918307934
##  [86]           NA -0.272647274 -0.373689636           NA  0.047006084
##  [91]  0.127052933 -0.029695988 -0.104710358  0.824744427 -0.419899423
##  [96]  0.300186085 -1.283947383           NA           NA  1.719403622
##
## $`54`
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##   [7]  0.50410262          NA  0.09269373  1.53239049 -0.84160142          NA
##  [13]  0.96201707          NA          NA  0.07521808          NA  0.26355731
##  [19] -0.45076006 -0.90166876  1.70161278  1.47228992  0.48342438  0.55962459
##  [25]  0.59293125 -0.08514671 -0.38279169          NA -1.59738789          NA
##  [31]  1.10766005          NA  1.26266618 -0.29207932          NA  1.43948620
##  [37]  3.16262224 -0.28390248          NA          NA -0.01394943          NA
##  [43] -0.15638336          NA          NA  1.39934999  1.54694696 -0.19083655
##  [49]  0.03000090  0.57827651 -0.93467005  0.54628119  0.25035295          NA
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##  [61]          NA -0.07187376  2.78886153 -0.83525252 -0.90297254  0.34270534
##  [67] -0.42933911  1.31935904  0.05449360  0.94828819          NA -0.28494472
##  [73] -0.44585561 -0.89384998          NA -0.66973196  0.44831115 -0.50901601
##  [79] -0.02655687 -0.86789397          NA          NA  1.22646444  0.25049848
##  [85] -0.09577127 -2.52863709 -1.61759245          NA -0.07042424 -0.77006428
##  [91]  0.33912688          NA -1.40008461          NA          NA  0.29759966
##  [97] -1.75027408  0.18031924 -1.33266583  0.52394339
##
## $`55`
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##  [19]          NA -0.38585018          NA          NA          NA          NA
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##  [37] -1.44027168  0.86662307 -0.47041483          NA -0.15114908  0.15395186
##  [43]  0.29168123 -0.56618731  1.03901554          NA -1.15874227          NA
##  [49] -0.58374000 -2.41720360 -0.25215805          NA          NA  0.33361308
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##  [55]          NA  1.11002464 -0.55777219  0.47287744 -0.21996146 -1.11571148
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##  [73]  1.03464428  0.56456760 -1.75676935  0.59867671 -0.55832512  0.15309518
##  [79] -0.92319515          NA -1.96789529 -0.53165008  0.04948443  0.09119107
##  [85] -0.95968994 -0.05645134  0.30734694          NA          NA          NA
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##  [97]  0.48273109 -0.57765921  0.12490018          NA
##
## $`56`
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##  [55]  1.45189516  0.25222189 -0.84492715          NA  0.63917845          NA
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##  [67]          NA          NA          NA -0.31750130 -0.82373138  0.81933539
##  [73]  0.12559314          NA          NA -0.88311503  2.47443824 -0.40004592
##  [79]  1.23398935 -1.37828382 -1.21309651  0.96165566  1.77248326  0.57550299
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##
## $`57`
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##  [16] -0.119992210  0.050352650  0.994320351 -0.409504670  0.759373960
##  [21]  0.552391014           NA  0.495588143 -0.584523403 -0.410486847
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##  [31]  0.390707454           NA           NA           NA  0.430391020
##  [36]  1.131774124  0.882325969 -0.283783656           NA  0.097861637
##  [41]  0.484429394 -0.536519615 -3.787525877           NA  0.594595808
##  [46]  0.151501643 -1.239865937  0.700970029           NA -0.142285262
##  [51]  1.029846221  0.978344443  0.020882033           NA -0.368407469
##  [56]  3.645451968           NA -1.633912473  0.170105733  2.419594646
##  [61]  0.527762057 -0.009843397  0.656023371           NA  0.233909493
##  [66]           NA -0.185205958           NA -0.069797443  0.680049788
##  [71]           NA           NA -0.088421254  0.110656061 -0.876173809
##  [76] -0.197068838 -0.598205422           NA           NA           NA
##  [81] -0.823069349           NA  0.567043794 -1.255448190  0.492258352
##  [86] -0.375554102           NA  1.890655955           NA  0.558446553
##  [91]  0.657610021  1.404770403  1.805717671 -0.780991217           NA
##  [96]  2.544710754 -0.908194013           NA -0.094514004  1.079017584
##
## $`58`
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##   [7] -1.84727140  0.20098716  0.09362652  1.49112658  0.53544752  1.06778638
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##  [19]  0.25119891          NA -0.58561938 -0.07195359 -0.37203167  0.65176684
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##  [73] -0.11649483          NA          NA -0.26522515 -0.62971675  1.88855959
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##  [85]          NA          NA  0.14868405  0.16052520 -1.53252558          NA
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##
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##   [7]  0.78665107  1.26220640  2.55117493          NA -0.46427437  0.52683075
##  [13] -1.22065850          NA -0.48897281  0.29858866          NA  0.47543196
##  [19]  0.72983602 -0.07019908  0.44318151          NA          NA          NA
##  [25] -0.17335740  0.39533438 -0.29412785  1.21286039 -2.33044019  0.47279642
##  [31]          NA          NA -0.83070001          NA -0.36022409 -0.14794039
##  [37] -0.26035623  0.56658736          NA  0.06746640 -1.28830129 -0.86470478
##  [43]  0.19939244          NA          NA -0.42364540          NA  0.50872891
##  [49]          NA  0.79140509          NA          NA          NA  0.19733336
##  [55]  0.47505466  0.62556684          NA -0.98160744          NA          NA
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##  [85]  0.17581237          NA  1.62955088  0.02691427          NA          NA
##  [91] -1.06009787 -1.57903606  2.28903702          NA          NA          NA
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##
## $`60`
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##  [11]           NA -0.127847022           NA           NA           NA
##  [16] -2.047038662 -0.023921529  0.783998751  0.461968306           NA
##  [21]  0.517865528 -0.584821075 -0.431798510 -0.166144811  0.277130536
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##  [41]  0.285610031 -0.543086845 -1.341147646  2.318539652  0.139242737
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##  [71]  0.378597355 -0.498737112  0.140005572 -0.394162084  0.681597730
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##  [81]           NA -2.224108737  0.448891255           NA -0.062463670
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##  [96]           NA  1.482348066 -0.554800557  0.499620870  0.167082142
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##   [7]  1.26945030 -1.19419447          NA -0.26441446 -1.30863877  0.09652154
##  [13]  0.18316956  1.37526361  0.35024618 -0.88710461  1.14845583  1.29339476
##  [19]  0.88496138 -0.01047532  0.58282361  1.11355051 -0.40953437          NA
##  [25]  1.01362127 -1.19937566  2.09098162          NA  1.28423232 -0.56420471
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##  [37]          NA          NA -0.54160033          NA          NA          NA
##  [43]  1.42229110          NA  0.56358039 -0.79930899 -1.89404126  0.66609711
##  [49]  0.50001769  0.17467672  1.48618818          NA -0.27482163 -0.72438398
##  [55]          NA  2.04222536 -0.03187681          NA          NA -0.01692033
##  [61]  0.67435865  0.21352179  0.16070772          NA -0.36334306 -0.82420809
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##  [73] -0.46553638          NA -0.61558182          NA          NA          NA
##  [79]          NA          NA -0.04254386  0.93050136          NA -1.62035642
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##  [97]  1.12559971          NA          NA          NA
##
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##   [7]          NA -0.32957318 -1.95931239  1.76480018  0.15459658  1.11982139
##  [13]  0.69054418  2.07272821  2.10768959          NA          NA  0.41796646
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##  [25] -4.06129836 -0.48830856  0.62360218  0.72296028          NA -1.32590726
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##  [61]          NA  0.24259438          NA -0.19603076 -0.89676155          NA
##  [67]  1.56142246 -0.16430324 -1.14775703  0.26240942          NA  0.58080162
##  [73]  1.62941940  0.20942345  0.22738944 -0.54122468  1.68993874          NA
##  [79]          NA -2.03551904  2.31609117          NA -0.32175369  0.26064210
##  [85] -0.10662981 -0.51583035 -0.39718611          NA  1.74532656 -1.03498434
##  [91] -0.63567771 -0.12538724 -0.08342364  0.20016172          NA -0.37577214
##  [97]  0.34136078 -0.35504749          NA          NA
##
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##   [7]          NA -0.08199768 -1.65290361 -1.12152026          NA          NA
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##  [91]  1.24862218  0.69073858 -0.95012816  0.72671872 -0.09230762  0.38661766
##  [97] -0.03777363          NA  1.54040809  0.71147194
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##   [7]          NA -1.38365211  1.14944561          NA -0.04376981  0.90518460
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##  [25]  0.20157034          NA  1.35138992 -0.09550640          NA -0.14358802
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##  [37] -1.09796317 -0.11720884          NA -1.63561844 -1.71949542  1.34519569
##  [43] -0.14365934  1.24410489  2.84131790          NA          NA          NA
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##  [55] -1.14994873  0.34733317  0.39247128          NA          NA  0.56989071
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##  [67]          NA  0.04490837  0.35273899 -0.09205889  1.07097841 -0.94584912
##  [73] -0.28517950  0.41820673  0.12356866          NA -0.82157759          NA
##  [79] -1.45109910 -0.49809593  0.63628983  1.23227330 -0.29333591 -0.62790948
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##  [25]  0.01877726 -0.84423361          NA -0.54106777          NA  0.88123819
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##  [85] -0.89349476          NA  1.50344011  1.25952595  1.24853483  1.04252626
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##  [97]  0.85343120  0.24140146          NA -1.30407379
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##  [43] -0.92752699  1.08394683          NA  0.11782843 -0.66692877  0.83184421
##  [49]  0.74056503 -1.15106852          NA -0.11622573 -1.16788488  0.26776112
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##  [61]          NA          NA          NA  1.75367390 -0.82111985  0.74958140
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##  [25] -0.49723700          NA  1.38589282          NA  0.31122608          NA
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##  [55]  2.09055057          NA -0.12839179 -0.54056931  0.79356899          NA
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##  [79]  1.29234503 -0.19743459 -0.15149240          NA          NA  0.51203017
##  [85]          NA          NA -1.91517659 -0.90673510 -1.30483452  0.22493224
##  [91] -0.08661369 -2.14764465  1.84928228  1.21822120  1.03751500  0.49573541
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##   [6] -0.0725341115  0.6341664648  1.4031969602 -0.0120256479            NA
##  [11]  0.6591445121 -0.4758544656  0.6071205781  0.7523995239  0.3470154946
##  [16]  0.8872303173            NA -0.3315735517  0.4238469049 -1.0879774272
##  [21] -0.5611862786 -0.0162109898 -0.7752517010 -0.5418516630            NA
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##  [36]            NA -0.0071328273  1.1109091468  0.5516007417            NA
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##  [97] -0.77445139 -0.74579592 -0.66201690  0.10100346
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##   [6]  0.051060168           NA  1.968936443 -1.178612732 -0.620588131
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##  [86] -0.758802211           NA  0.372125129           NA           NA
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## $`71`
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##  [61] -1.533637148  0.030056295 -0.546289614           NA           NA
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##
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##  [13]  1.08820140  0.41010009  0.03462697          NA  0.84236412 -0.61594491
##  [19] -0.59389661          NA -0.40582448 -1.45716651          NA  0.11494956
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##  [43]  1.07376508  0.90100955  1.58517841  1.95070088  1.25388326          NA
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## $`73`
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##  [13] -0.07663019  1.47166295 -0.62447457          NA  1.06484376 -1.18479745
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##  [37] -0.98179933          NA -0.11099048  1.43072845 -0.96262967 -0.58193494
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##  [76]  2.034921975  0.579739486           NA  0.813915864           NA
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##  [36]            NA            NA -7.738204e-02  7.625303e-01  1.696807e-05
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##  [66]  1.248963e-01  1.589966e-01            NA -1.256516e-01  7.452397e-01
##  [71] -8.804025e-01 -1.966184e-03  1.292284e+00 -7.868398e-01 -5.063373e-01
##  [76]  5.126526e-01 -4.035039e-01  1.934714e+00  3.396727e-01  2.305093e-01
##  [81] -3.133913e-01 -1.748080e+00            NA -1.719171e+00  8.936579e-01
##  [86]  2.545597e+00 -2.628934e-01            NA  1.830110e+00 -1.238173e+00
##  [91]  6.631355e-01 -1.045985e+00  1.459254e+00 -1.114632e+00 -1.219677e+00
##  [96] -1.046093e+00 -1.640379e-01            NA  4.226988e-01 -6.480908e-01
##
## $`76`
##   [1]  0.9650209761            NA -0.0841989419            NA  0.7751883996
##   [6] -1.3279861868 -0.7498802618  1.9208363636 -1.1201413111            NA
##  [11]  0.0893134132            NA            NA -2.2440138948 -0.3675002503
##  [16] -1.1655360407 -0.1532621307 -1.3195446896  1.6816254669            NA
##  [21]  0.0312988778            NA  0.1067215044            NA  2.0496674261
##  [26]  2.1212212505 -0.6805472639 -1.2565903449  0.2117510236  0.9739387446
##  [31]            NA -0.4195455722  2.0020390148  1.9714214595            NA
##  [36] -0.3966829602  0.9217168680 -0.5031982048  1.2098688798            NA
##  [41] -1.2016722694  0.4604430460  0.3544155460  1.3372036474 -0.2273563232
##  [46]  1.0907627889            NA  0.5802183837            NA            NA
##  [51] -0.2271287417 -0.1768563960            NA -1.2157014025            NA
##  [56] -0.0444173409            NA  0.7836376937  0.3054452143 -0.6108844376
##  [61]  1.7842297750 -0.3910231609            NA  0.3026207185 -0.8439209894
##  [66] -0.0891521286  1.5944157694  0.1721780892  0.6086622447  1.8047442418
##  [71]            NA -0.8406565956            NA            NA  0.7119747402
##  [76]            NA            NA  0.6358510867 -0.2667936118  0.1087406583
##  [81] -1.0655956055  1.1274559645            NA  0.2287626199  0.2092717054
##  [86]  0.3394162341  1.0936711071 -0.7835813298            NA  0.0203477773
##  [91]            NA            NA  0.1211009481 -0.0003925677  0.2391304018
##  [96] -1.7365029060  1.0566345044  0.7858222572 -0.0829317011 -1.0130161895
##
```

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##   [1]          NA -0.15185695  1.94419546  1.02415927  0.92055576 -0.01040976
##   [7] -0.36160029  0.24444132 -1.26601020 -0.25546883          NA          NA
##  [13]  0.18541141          NA -0.13714662 -0.42049517 -0.94969920  0.32454801
##  [19]  0.88680246          NA          NA -1.14716059  0.43542922 -1.16042902
##  [25]          NA -1.05394164          NA          NA          NA  0.65479489
##  [31]          NA          NA          NA -2.50295867          NA -0.21753450
##  [37]          NA -1.49898207 -0.21023568  1.12485158  0.27819550  0.30973935
##  [43]          NA -0.86396667 -0.19049608          NA -0.35978770  0.72161754
##  [49] -0.16125554 -0.07378438  0.83740193          NA          NA -0.35111635
##  [55] -0.53285117 -1.26684474          NA -1.12026745  1.62526889  1.25144692
##  [61] -0.29436047          NA -0.50527974 -0.08715011          NA -2.08567892
##  [67] -0.30117363 -0.22242568 -0.26676509  0.96053009  0.19017170          NA
##  [73]          NA  0.28976937 -1.74100047 -0.42665827          NA          NA
##  [79]  0.97391608          NA -1.91644829  1.32243367  1.84353794  0.91273183
##  [85]  0.94016223          NA  0.44379014 -1.75168686  1.29423489  2.07891038
##  [91]  0.51553553          NA  0.31158657          NA          NA          NA
##  [97]  0.83889764 -0.12933148  0.09058810          NA
##
## $`78`
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##   [7]          NA  0.91799221  0.07167077          NA -1.50830146          NA
##  [13]  0.89348563  0.40250528  0.17052387 -0.40310310  0.12244114  0.02477015
##  [19] -0.63866678 -0.77160701 -0.41960558  0.22800897  0.28070242  0.26108451
##  [25]  0.07940369 -1.44149420          NA          NA  0.41314159 -0.35375198
##  [31]          NA  0.41206156          NA          NA  0.79117378          NA
##  [37]          NA -0.64226953  0.84786825  1.68746424  0.06511539 -0.52335607
##  [43]          NA          NA  0.43141858          NA          NA  1.47691381
##  [49] -1.87165092  0.41766393          NA -1.14702769  0.79658263          NA
##  [55]          NA          NA  0.87560366 -0.22852851  0.95960069  0.36672365
##  [61] -0.59388721  0.49192980          NA -1.44126863  2.03731892 -0.68736333
##  [67] -1.19281592          NA  0.17633811 -1.10823228  0.34543546          NA
##  [73]  0.21833893  0.26725646  0.58785686 -1.65284104 -1.65466689  1.74644659
##  [79]          NA  2.05672700 -1.34719500          NA -0.14197938  0.46750448
##  [85]  0.05129145 -0.22048056 -0.76822273  0.76470374  0.37807715 -1.55750589
##  [91]          NA          NA  0.97813640 -0.03526830 -0.48394123 -1.14216576
##  [97]          NA -0.23627560 -0.74143292  1.24304979
##
## $`79`
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##   [7]          NA  0.86702339          NA          NA  2.30124740          NA
##  [13] -1.29665110  1.62476769          NA          NA  0.68591448          NA
##  [19]  0.76626308  0.42000099  0.38893697  0.94219492          NA -0.16757408
##  [25] -1.84347611  0.25713559 -1.63044039  1.20751365 -0.30810857  0.59139354
##  [31]  1.48982198 -0.77950183 -0.33184120 -0.34274094 -0.77643480  1.79818018
##  [37]          NA  0.12472849 -1.48624792 -0.20292785  0.04366777          NA
##  [43]  0.03472473  0.92841344 -0.09459187  1.06570314 -0.30458505          NA
##  [49]  0.52742301 -1.45921235  2.46187971          NA -0.73960521          NA
##  [55] -0.16953166          NA          NA  1.13821277  0.39615172  0.91901180
##  [61]          NA          NA -2.13076398          NA -1.21721119          NA
##  [67] -1.03495847 -0.83032509          NA  0.43906068  1.45224687  0.56396591
##  [73]          NA  0.28057766  0.01814588 -1.15147493          NA          NA
##  [79]  0.84923602 -1.02721462  0.27458310          NA  0.57022958          NA
##  [85]  0.36047723  0.53249976          NA          NA          NA -2.21831001
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##  [91]          NA  1.28691207 -1.67813225 -0.64978048 -0.48360635 -0.06976460
##  [97]          NA  0.44430601 -1.32995212  0.74653074
##
## $`80`
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##   [7]  0.76659159  1.60587470          NA          NA  0.88633568  0.49114031
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##  [19] -0.36610780 -0.53988973  0.97019895          NA -1.13129435  0.28077502
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##  [31]          NA          NA -0.24444847 -0.01901826  0.25632016          NA
##  [37] -1.19867827  2.10117964 -0.36948715 -0.06190513 -0.18238751 -0.82430581
##  [43] -0.88650755          NA  2.36822853          NA  0.41799471  0.36401167
##  [49]          NA -0.52897104 -1.63658549 -1.78286463 -0.19669348          NA
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##  [61]  0.90604166          NA  0.33562780          NA          NA          NA
##  [67]  0.52620213 -0.19627241 -0.54706982 -0.35908050  0.88621371          NA
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##  [79] -0.06596697          NA  0.09764144          NA  0.75259274  1.42027838
##  [85] -0.95796426 -0.52273162  0.20279035 -1.06944898  1.02773272 -0.30970072
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##  [97]  1.03664952 -0.55649986          NA          NA
##
## $`81`
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##   [7]          NA -1.27006467          NA          NA          NA -0.50922445
##  [13] -0.64059483          NA  0.04762255  0.83783465  0.25740003  0.26703301
##  [19]          NA  1.14645758 -0.37760394          NA -1.36800193 -0.85741784
##  [25]          NA          NA -0.86461417  1.15948033          NA  0.38069945
##  [31] -0.26036829          NA -0.59170730  0.82623651 -0.43618448 -0.47638226
##  [37] -1.35338778 -0.03354883          NA          NA          NA  0.30681204
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##  [49]          NA          NA          NA  0.94055732          NA -1.29715855
##  [55]  1.75195863  0.80596725 -0.70407211 -2.37314207 -0.35070373  0.09074896
##  [61]  0.78447090 -0.45353559          NA          NA  0.13122142  0.33275044
##  [67]  0.51428592 -0.49460454          NA          NA          NA  0.47242800
##  [73] -0.21975626 -0.20277735 -0.86569133  0.40276542          NA  0.78103404
##  [79] -0.31326596  1.33151912 -1.48246377 -0.81098233          NA  0.20294226
##  [85]          NA  0.07917942  1.39431746  0.38825467 -0.86016948 -0.57282156
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##  [97]          NA  0.57612449 -0.05135487          NA
##
## $`82`
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##   [6]          NA  0.081034458          NA          NA          NA
##  [11] -1.495108039  0.153697375  1.417540064          NA          NA
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##  [21]          NA  1.465438999  0.371811774  1.045888516          NA
##  [26]  1.925406848 -1.084439903 -0.601035890  1.609807421          NA
##  [31] -2.447472333          NA  0.603277727 -0.136190774 -0.213860553
##  [36]  0.856109471  0.917929173          NA          NA          NA
##  [41] -0.012223347  1.465644892 -0.902795171          NA  0.967375220
##  [46] -1.200836411 -0.343074242 -1.224657971 -0.080939854  0.083391543
##  [51] -0.434408216 -0.978870359  1.227255010          NA          NA
##  [56]  1.145168539 -0.802039054 -0.390393740          NA  0.281254658
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##  [61]  0.247575928           NA  0.739730047 -0.817438660  2.065935016
##  [66]  0.776347303  1.450535582  0.855038925 -0.788218436  0.499599163
##  [71] -1.164784023           NA  0.428543565           NA  0.415265172
##  [76] -0.103123183 -0.811896936 -1.588554119  1.495091823 -0.407191985
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##  [96]  0.346028599           NA  0.481179149           NA  1.205750526
##
## $`83`
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##   [6]  0.477747306 -0.473808960           NA  0.810590486  1.525382150
##  [11]  0.175771531           NA -0.244575496           NA  1.815529711
##  [16]           NA           NA  0.048731996  0.458278622           NA
##  [21] -0.693949874 -0.199358015 -0.573709897 -1.248918554  2.663709691
##  [26] -0.719515563  1.050834182           NA           NA -0.001983839
##  [31]           NA  0.548676016           NA  1.138438659  0.220174382
##  [36] -0.937288995 -0.136333532  0.814931210 -1.190518411 -0.329810191
##  [41] -0.838467660  0.255197128           NA -1.218141535 -1.097556291
##  [46]           NA           NA -0.153733981  0.585793301  1.766460742
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##  [61]           NA           NA -0.468946077 -0.112233837           NA
##  [66] -0.604337048 -0.005888468  0.922741855           NA           NA
##  [71]  0.576355021 -1.179916524 -1.001846882  0.168312336 -1.023594063
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##  [81]           NA           NA  1.578549313           NA  0.837177079
##  [86] -1.439377144           NA  0.450054916 -0.426853107  0.624776207
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##  [96]  1.981583810  0.171474535           NA  0.893922288  2.131803976
##
## $`84`
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##   [7]          NA  1.10892085          NA -1.85988776  1.11191712 -1.57678944
##  [13]  1.08275672  0.75926062  0.86363169  1.24431367          NA          NA
##  [19]  0.83201398 -2.19883427  2.34385910 -1.42821717  0.48066474  0.90292742
##  [25]          NA  1.84806515  0.93531763  1.16606804 -0.26538420          NA
##  [31]  1.49304745          NA  0.25733907  0.51217836  0.43205136 -0.39569309
##  [37]  0.87152812  0.07286741          NA          NA -0.93753801 -1.73884730
##  [43]  1.05180853 -0.67539512          NA -0.91007718 -0.87658722  0.68828664
##  [49]  0.74613605 -0.36713584 -0.85146369  1.79834876          NA          NA
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##  [61] -0.20878936          NA -0.86750528  0.79152282          NA -0.56164804
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##  [73]  0.77003143 -0.29308969          NA -1.17913273 -1.38744473 -0.06325704
##  [79] -0.28408413 -0.35444799 -0.97764876  1.90527947          NA -0.98513013
##  [85]  0.23457257 -1.54322562 -0.28992836          NA -0.11409800          NA
##  [91]  1.00335293  0.89925999 -1.50914156  1.59982737 -0.83763895          NA
##  [97]  1.47487596 -0.66386041  0.12097502          NA
##
## $`85`
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##  [19]          NA -0.38546165          NA  0.40985106          NA  0.58661450
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##  [37]          NA  0.85814814          NA -1.37142831          NA  0.93468013
##  [43]          NA  1.28264537  1.29773424  0.03452919          NA          NA
##  [49] -0.44303447 -0.76886882  1.13226837          NA          NA          NA
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##  [67] -1.11367271 -0.94049100          NA          NA  1.33939257 -0.42196967
##  [73]  1.65099364          NA  0.31549284          NA          NA          NA
##  [79]  0.42461853  0.87600979 -0.82324250 -0.50688467 -0.91404111          NA
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##  [91]          NA          NA -1.87525245          NA -2.22353524 -0.83070445
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##
## $`86`
##   [1]  0.03238726          NA -0.55907914          NA -3.18227029 -1.17998597
##   [7] -0.43748207          NA          NA -0.02010784  0.85410417 -1.63023006
##  [13]          NA          NA -0.54326366  0.83078816 -0.07194887  0.88277487
##  [19] -1.81027393  0.78341507          NA          NA  1.80270103 -0.30569177
##  [25]  1.15114074  0.65925561 -1.66766773 -0.22932224 -2.17154832  0.35413978
##  [31] -0.70668047          NA  0.14178147 -0.54645972 -0.65000342  1.37635979
##  [37] -0.21473643          NA -1.00841797 -1.75043720 -0.07629156 -1.53848764
##  [43]  2.08434836  1.41585481  0.01622468 -0.45252663  0.80171617  0.75429297
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##  [55]          NA -0.79770691          NA  0.09599746 -0.72830650 -0.65999949
##  [61] -0.68134530 -0.36518212          NA -1.49860750 -0.76747907 -1.20683487
##  [67]          NA -0.88381835 -1.21991851 -1.99268717  0.65750482 -1.55579590
##  [73]  0.31659652          NA  1.07825169 -0.70959923 -0.78334007  0.95646802
##  [79]  1.84110417          NA          NA          NA          NA -0.65059728
##  [85] -0.20536401 -0.06334212          NA          NA  0.39079259 -0.02618857
##  [91] -0.96675112          NA -1.05807987 -0.51928695  1.08440732 -1.18939206
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##
## $`87`
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##  [13]  0.73396148  0.08412157          NA          NA  0.93046019          NA
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##  [25]  0.30605950  1.72516078  0.66145184 -1.00973568 -0.33043290          NA
##  [31]  0.41308415 -0.23160950 -0.63204264 -1.04402669 -2.62493936 -0.67329797
##  [37] -0.29501845 -0.36006553 -1.40301464          NA -1.98732710 -0.34348063
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##  [49] -0.79367840          NA  1.29342693 -0.52882078  0.73348299 -0.36850938
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##  [79]  0.09189193  0.16087450  1.00749716          NA  1.11066415 -0.83620062
##  [85]  1.45060300  0.56505910          NA -0.16254998          NA -1.39694256
##  [91]  0.50101129  0.68542780 -0.18942043  0.01784325 -0.65712031          NA
##  [97]          NA  0.06786179  0.87540389  2.22776043
##
## $`88`
```

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##   [1] -2.24744315          NA  1.48740799  0.05870544  1.01092219  0.19086486
##   [7]          NA          NA          NA          NA -0.31791604 -0.78886957
##  [13] -1.47855498          NA -1.29204974  2.15315253  0.08202492  0.97327009
##  [19]  0.10405816          NA          NA          NA  0.53809143 -1.45930973
##  [25] -0.02546128          NA          NA  1.21362862  0.60566747  1.01816407
##  [31]  0.26616292 -0.56723421 -0.15570687  1.53190328 -0.26146363 -1.14138031
##  [37]  1.66100164  0.33479958 -1.12041979 -1.18193768  0.40452694          NA
##  [43]          NA -0.01577766 -0.10833353  1.18841654  3.31939891  0.38914169
##  [49]          NA -1.37151662  0.00547643  1.06721458 -0.10078399  1.85158265
##  [55]  0.18676226 -0.15547304  0.18960879  1.45753079 -0.22345655 -1.31464104
##  [61] -0.61511261  0.24843353 -1.09119695          NA          NA -0.56156441
##  [67]          NA          NA -1.73485221          NA  0.10221233 -1.22692801
##  [73] -2.00775852          NA  0.07493379          NA -0.25601005 -0.61576668
##  [79]  0.69063289          NA  1.57518265  0.76921384          NA          NA
##  [85]          NA  1.22841371  0.20302164  0.42400355  0.55828383  1.01956163
##  [91] -0.16526641  1.23599639 -0.66408161 -0.67478055  1.24310982  0.10720311
##  [97]          NA  0.15295668          NA  0.88351756
##
## $`89`
##   [1]  0.467158885 -1.513059632  0.829505229 -0.460543615 -1.510549380
##   [6] -0.922405831  0.644436685  0.763327450          NA -0.716200870
##  [11] -0.458500318  1.529385591  0.628801357          NA -0.018905936
##  [16] -0.230830736  1.354255895          NA  0.841373662          NA
##  [21]  1.340242501  0.014650433          NA          NA          NA
##  [26] -0.155267334 -0.166151838          NA          NA          NA
##  [31] -0.352387818  0.925628244          NA -0.622938493  1.095998653
##  [36]          NA          NA -0.491378246          NA          NA
##  [41]  0.284977803 -0.643653463 -0.120134996  0.370435298 -0.252981860
##  [46] -1.135817452 -0.731546564  1.719609556  0.480430864  0.305207354
##  [51]          NA -0.677707110 -0.988905861 -1.433018005          NA
##  [56]          NA -1.176049793          NA          NA -0.547533829
##  [61] -0.341257899  0.779916234          NA          NA  1.198421002
##  [66] -0.413969038          NA  1.004961178 -1.092471896 -0.158401042
##  [71]          NA -0.005641043 -0.150540735          NA  0.415302008
##  [76] -0.270997410  0.200252632          NA  0.275656826  1.512321428
##  [81]  0.039929531  0.514048574          NA  0.976500535  0.988408620
##  [86]          NA -0.089662170          NA          NA          NA
##  [91]  0.557238987 -0.129848374  0.315321591          NA -0.973152629
##  [96]  1.730787416  1.525033792 -0.280351772  0.062747378  0.570896122
##
## $`90`
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##   [7]          NA -0.76756368          NA          NA  1.96088269 -0.43673424
##  [13]          NA  0.14143468          NA  0.36655141 -0.38734236  0.79445603
##  [19]          NA  0.06822548          NA -0.14103615 -0.93821611          NA
##  [25]  0.69792262 -0.54612644  1.19065207 -0.97015152 -1.16234090          NA
##  [31]  0.29740538  1.77553798          NA -1.37202703          NA          NA
##  [37] -0.56082572  1.83313138          NA -1.06048504  0.47138025  0.38222287
##  [43]  1.66836171 -1.20298892 -0.27554690 -0.66075721          NA          NA
##  [49]          NA  0.30900382          NA  0.49083644          NA  0.44437818
##  [55] -0.70459542  1.10524999          NA -0.82758662          NA -0.75560994
##  [61]  0.12074928  0.12080242          NA          NA          NA -0.74670961
##  [67]  1.08424901  0.70697549  0.96058582  0.46645081          NA  1.18595797
##  [73]          NA -0.62435363          NA          NA  0.11460785  0.33647657
```

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##  [79]          NA  0.05474174  0.35359455 -0.67643757 -1.19715729  1.91790718
##  [85]  0.75626217 -0.20171486  0.97954206  2.19511432          NA  0.27189990
##  [91]          NA -0.58484691  1.92518607 -0.12904668          NA          NA
##  [97]  0.73042438  0.01193836          NA -0.84663686
##
## $`91`
##   [1]           NA -2.1113612810           NA -0.3730568230 -0.1101576247
##   [6] -1.6118454742 -0.5521011678  0.1050667495  0.1486499667 -0.3176380399
##  [11]           NA           NA -0.3778335239 -2.0575673015 -0.7005176482
##  [16] -0.2378052194  0.4317320595  0.2093332402           NA -0.7118865002
##  [21] -1.3285928503           NA           NA  1.0323460165  1.2414184063
##  [26] -1.2542764898  1.3256389848 -1.7016544079           NA           NA
##  [31]           NA -0.0581065257  1.3873402667 -1.0633986981  0.5638856243
##  [36]           NA  0.3634222817 -1.1443513121           NA -0.4351141416
##  [41] -1.5761652215  0.6124364438 -1.6267494409 -0.0002499339  0.7703961412
##  [46]           NA -0.8438896869  1.1395517480           NA           NA
##  [51]           NA  0.9046993383 -0.1261172439  0.7916647374 -1.6732035932
##  [56]           NA -1.6007970050  0.3712438988           NA -0.7817476399
##  [61]  1.1652439035  0.0407905704  0.8661590969           NA           NA
##  [66] -1.5003267569 -0.2651412893 -0.5192224019  0.7673332742  0.3411485746
##  [71]           NA -0.4623810671  0.6486252994  0.3356665084           NA
##  [76] -0.3140425651  0.5273093957  0.8641090054           NA           NA
##  [81] -0.6994090404           NA -0.6321005725           NA -1.7559206940
##  [86]  1.7111030403  1.7089472418           NA -2.4442858263 -0.8584339786
##  [91] -0.9725949249 -0.7504561526           NA  1.0398113533 -1.6230272523
##  [96]           NA -0.8892151524           NA  0.6153933887  0.7237070865
##
## $`92`
##   [1] -0.79947948  0.09475830 -0.56386616  2.00324895  1.23043962 -0.76371851
##   [7]          NA -0.34417229 -0.55551808          NA -1.17435690  0.04986985
##  [13]  0.13937070  0.15744062 -0.24078994          NA          NA          NA
##  [19]  0.53132631          NA  0.93922784  0.14977492          NA -0.94159619
##  [25] -1.07939459 -1.40699860 -0.69985114          NA -1.00540720  0.47364962
##  [31] -1.28314911  0.47495389 -0.81762811          NA -0.75801592 -0.42202933
##  [37] -0.80067347 -0.45833442  1.62114594  0.06663947          NA -0.50963480
##  [43]  0.57606372 -0.74724033  1.19720032          NA          NA          NA
##  [49]          NA -1.04563983          NA  0.76516806  1.95145357 -0.48548306
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##  [73]          NA  0.37243146  1.21611617  0.86632018 -0.66854162 -0.41636481
##  [79]          NA          NA  1.92271629  0.50388130  0.38580373  1.49016233
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##  [91]          NA  1.80935864          NA  0.07040360 -1.22926954          NA
##  [97]  1.16894773  1.23191787          NA          NA
##
## $`93`
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##   [7]          NA  0.76042407  0.45384748          NA          NA  0.46126825
##  [13] -1.49912115 -0.94940902 -0.24101101  1.95494793  0.41588567  0.28315980
##  [19]          NA  1.13291468  0.92921124  0.15380264 -0.59073862          NA
##  [25]          NA          NA -0.04968856          NA          NA          NA
##  [31]          NA          NA -0.06421559  0.23022894 -0.70010182  1.25295288
##  [37]  2.01926357 -0.60826068 -0.34653094  0.21551030          NA          NA
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##  [43]          NA          NA  1.51177590          NA -1.28555451  0.73612158
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##  [55] -1.09574485 -0.03852330  0.07783161          NA -0.64788113  0.07429355
##  [61]          NA  1.34412612          NA          NA -0.22452654 -0.10579336
##  [67] -0.15344359  0.26900917  0.49026402  0.46392369 -0.87643990          NA
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##  [79] -1.28787732 -1.48152555          NA          NA          NA -1.34066685
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##  [91]          NA          NA          NA          NA          NA -0.96363135
##  [97]          NA -0.28583460 -1.28701493 -1.96910973
##
## $`94`
##   [1]  2.121525821 -0.503655189           NA  0.179485243 -1.027939086
##   [6] -1.018965780  0.025845313           NA  0.683940010  1.540720873
##  [11]  0.434992891  0.348692073           NA -1.623104142  0.124145192
##  [16] -0.641888054  0.037043046           NA  0.164552593           NA
##  [21]  1.655206133 -0.353277998           NA  0.076283124 -0.044058639
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##  [31] -0.171220478           NA           NA  0.007167203  2.187186956
##  [36]           NA  0.932802334  2.026777722 -0.833868339  0.446185169
##  [41] -1.494803474 -0.300436265  0.613407236           NA           NA
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##  [61]           NA -0.127067782           NA -0.237802892           NA
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##  [76] -0.760321801  0.299053855           NA -0.040303079           NA
##  [81] -1.050019728 -0.428613468 -1.179339957 -0.309262754           NA
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##
## $`95`
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##   [7] -0.94668896 -1.81185646          NA  0.32631885  0.71601726  0.65143272
##  [13]  0.13070407          NA  0.81399922          NA  1.68629727          NA
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##  [25]  0.71493045 -1.58989954  0.50043794  0.38912503  1.50870066          NA
##  [31] -0.95911467 -0.27683224 -0.68531781  2.06740679  0.28053656          NA
##  [37]  1.15135930  0.05563637 -0.20276185 -0.81560498  1.53146462  0.26016573
##  [43] -1.09229845  0.48818182  0.54709480 -0.42331408          NA          NA
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##  [55] -0.49675033          NA          NA -0.62643873 -1.23356097          NA
##  [61]          NA          NA -0.05758832 -0.99561449  0.04788071 -1.09021784
##  [67]  1.69360689 -0.33871605 -0.34700130  0.82475688          NA  1.10593068
##  [73]  0.65138482  0.74468442 -0.06728044 -1.04852320  0.46075324  0.43490636
##  [79] -0.85697617 -0.69197042  0.59309768  0.36509497          NA -1.72183019
##  [85] -0.71080642 -0.88436011  1.99857983 -1.11675474 -1.75818125 -0.85265238
##  [91] -1.28809025          NA -0.74424405          NA -0.76880201          NA
##  [97] -0.22039290 -1.37775844  0.39043193  0.07301873
##
## $`96`
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##   [6]  0.548559803 -1.195579540           NA  0.227948713           NA
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##  [16]           NA           NA -0.396632587 -0.555683162           NA
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##  [46]  0.484417549 -0.113104262  0.917814919           NA  0.479770870
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##  [56]  0.117133854 -1.027004435  1.039202373           NA           NA
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##  [71]  1.116792419           NA           NA -0.290109042 -0.252044700
##  [76]           NA -0.670949111 -1.628231672           NA  1.378975781
##  [81]  0.653769970           NA -0.183361812 -0.728838025  2.789378519
##  [86]  1.384588441 -0.497256429  1.327136357  1.080768561  0.330488719
##  [91] -0.342700851  0.512930159  1.408927430  1.273371833           NA
##  [96]  0.031833793  0.202210222  0.201409837 -0.808707791 -2.001144939
##
## $`97`
##   [1]  0.810072589 -0.213709602  2.743550721 -1.356996206 -0.446323376
##   [6] -0.395031601 -0.993001360 -2.465912104 -1.302350858 -1.241611392
##  [11] -0.921496966           NA           NA -0.296393614  1.549168905
##  [16] -0.121456752 -0.411955880 -1.664212354           NA -0.196291408
##  [21] -0.009934313 -0.599116410  0.205132655 -0.292469190           NA
##  [26]  0.158102514 -0.358952538 -0.995201090           NA  1.170115135
##  [31] -0.664592007           NA  0.149635018           NA           NA
##  [36]  2.334074560  0.495365493  0.651387631  0.982962468 -0.829937943
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##  [46]  0.245148606  0.010297616 -0.961729948           NA           NA
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##  [71]           NA  1.212446964           NA           NA  0.839669610
##  [76]           NA -0.391304912  0.700585081           NA           NA
##  [81] -0.451270844 -0.727395154 -1.675480847 -1.108900986           NA
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##
## $`98`
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##   [7] -1.52065517  0.29672782 -0.18346065 -2.66477924  1.87971337          NA
##  [13]  1.88863931 -2.39127278 -0.42267157  0.64550934 -2.17375737  2.49494564
##  [19]  0.24043829          NA          NA          NA -0.06454398          NA
##  [25]          NA          NA  0.66188327  0.93227719  1.79896642          NA
##  [31]          NA -0.23582169  0.35303974          NA          NA          NA
##  [37] -0.46382168  0.65607924  0.15584502          NA  0.85664278  0.87708534
##  [43]  0.88927082  1.39039023          NA          NA -0.78669200          NA
##  [49]  0.08277264 -1.99826211 -0.28045530          NA  0.13682633 -0.87643146
##  [55]          NA  0.63713300  2.39250338 -1.32139804 -0.54308296  0.19548732
##  [61]  0.27791856 -0.46679809 -0.30337869 -0.79962864          NA          NA
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##  [67]          NA -0.35121018  0.04553331  0.89769223          NA -1.42911838
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##  [85]  1.42028047 -0.81372525 -0.41219505 -0.12842459 -0.24860719 -3.04404002
##  [91] -1.15453568  0.29040098          NA  0.28381040          NA  1.67088872
##  [97] -0.15359319  0.08630848  0.15827338  0.25104858
##
## $`99`
##   [1]          NA          NA -0.59258108 -1.13899180  1.76149100  1.63897388
##   [7]  0.50133689          NA  0.46319389          NA          NA -0.77225738
##  [13]          NA          NA          NA -1.17316220 -0.63194547  1.44567766
##  [19]  0.50192687          NA -0.34938071  0.21777768  0.68433065          NA
##  [25] -1.26112043 -0.47779277 -0.56799490          NA          NA          NA
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##  [37]          NA  0.55615815  1.13888286          NA  0.29279191  0.29027561
##  [43] -1.08093411 -0.50331193 -1.41170844          NA          NA  1.14920895
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##  [61] -1.17626056          NA          NA          NA  0.54867723  0.11755575
##  [67]          NA -0.25821353 -0.77286034  0.66622161  1.05780780  0.70271558
##  [73]          NA -0.96462142          NA -1.36728047  3.58191239  0.02658382
##  [79]          NA  0.11887619 -1.04428245  1.44591735 -0.39473196          NA
##  [85]          NA          NA  0.18926586          NA -1.11204517  1.77201212
##  [91]          NA  1.32045126          NA -0.50749022          NA -0.78517822
##  [97]  0.04746198          NA -0.05430108          NA
##
## $`100`
##   [1] -0.79079603          NA -0.38228084          NA  1.11474391          NA
##   [7]          NA  1.09508474 -1.00495759          NA  1.35429483  1.70960012
##  [13] -1.29627165 -0.50565028          NA  2.18615888 -0.59362494 -0.22974945
##  [19]          NA -0.65964114  0.41829230          NA -1.16012130  1.05911631
##  [25]  0.09002293  1.41863129  0.17668923  0.17371336 -1.59251380 -2.08005947
##  [31]  1.92713563  1.10630196  2.15049126  0.93854305          NA -0.26661607
##  [37] -0.57323223 -0.75593352 -0.87036375          NA  0.73469567  0.33272783
##  [43]  0.46622018          NA -0.13900703          NA -0.04753361          NA
##  [49]          NA          NA  0.32969066  1.15385698  0.05142685 -1.40143178
##  [55]          NA -0.26035904 -0.89257558  0.02028149  0.65730919          NA
##  [61] -0.16612940 -0.43765900          NA  0.59905385  0.26433004          NA
##  [67] -0.35873852          NA          NA          NA  1.17284199 -1.00020206
##  [73] -0.65239172 -0.31327609          NA -0.39382440          NA -1.21197066
##  [79] -1.21839864          NA          NA  1.35574570  0.52616448  2.10517598
##  [85]  0.37594833  0.28277717 -1.70222608 -1.70447750 -0.02015766 -1.54206241
##  [91] -0.27663424  0.30564302  0.62085128  0.18720823          NA -1.51435256
##  [97]          NA  0.94662100  0.59942388          NA
```

- 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(split(X, col(X)), function(x) {list(min= min(X, na.rm= T), max=max(X, na.rm= T), pct_missing=(su
```

```
## $`1`
## $`1`$min
## [1] -4.240691
```

```
##
## $`1`$max
## [1] 4.049516
##
## $`1`$pct_missing
## [1] 31.7
##
##
## $`2`
## $`2`$min
## [1] -4.240691
##
## $`2`$max
## [1] 4.049516
##
## $`2`$pct_missing
## [1] 31.7
##
##
## $`3`
## $`3`$min
## [1] -4.240691
##
## $`3`$max
## [1] 4.049516
##
## $`3`$pct_missing
## [1] 31.7
##
##
## $`4`
## $`4`$min
## [1] -4.240691
##
## $`4`$max
## [1] 4.049516
##
## $`4`$pct_missing
## [1] 31.7
##
##
## $`5`
## $`5`$min
## [1] -4.240691
##
## $`5`$max
## [1] 4.049516
##
## $`5`$pct_missing
## [1] 31.7
##
##
## $`6`
## $`6`$min
```

```
## [1] -4.240691
##
## $`6`$max
## [1] 4.049516
##
## $`6`$pct_missing
## [1] 31.7
##
##
## $`7`
## $`7`$min
## [1] -4.240691
##
## $`7`$max
## [1] 4.049516
##
## $`7`$pct_missing
## [1] 31.7
##
##
## $`8`
## $`8`$min
## [1] -4.240691
##
## $`8`$max
## [1] 4.049516
##
## $`8`$pct_missing
## [1] 31.7
##
##
## $`9`
## $`9`$min
## [1] -4.240691
##
## $`9`$max
## [1] 4.049516
##
## $`9`$pct_missing
## [1] 31.7
##
##
## $`10`
## $`10`$min
## [1] -4.240691
##
## $`10`$max
## [1] 4.049516
##
## $`10`$pct_missing
## [1] 31.7
##
##
## $`11`
```

```
## $`11`$min
## [1] -4.240691
##
## $`11`$max
## [1] 4.049516
##
## $`11`$pct_missing
## [1] 31.7
##
##
## $`12`
## $`12`$min
## [1] -4.240691
##
## $`12`$max
## [1] 4.049516
##
## $`12`$pct_missing
## [1] 31.7
##
##
## $`13`
## $`13`$min
## [1] -4.240691
##
## $`13`$max
## [1] 4.049516
##
## $`13`$pct_missing
## [1] 31.7
##
##
## $`14`
## $`14`$min
## [1] -4.240691
##
## $`14`$max
## [1] 4.049516
##
## $`14`$pct_missing
## [1] 31.7
##
##
## $`15`
## $`15`$min
## [1] -4.240691
##
## $`15`$max
## [1] 4.049516
##
## $`15`$pct_missing
## [1] 31.7
##
##
```

```
## $`16`
## $`16`$min
## [1] -4.240691
##
## $`16`$max
## [1] 4.049516
##
## $`16`$pct_missing
## [1] 31.7
##
##
## $`17`
## $`17`$min
## [1] -4.240691
##
## $`17`$max
## [1] 4.049516
##
## $`17`$pct_missing
## [1] 31.7
##
##
## $`18`
## $`18`$min
## [1] -4.240691
##
## $`18`$max
## [1] 4.049516
##
## $`18`$pct_missing
## [1] 31.7
##
##
## $`19`
## $`19`$min
## [1] -4.240691
##
## $`19`$max
## [1] 4.049516
##
## $`19`$pct_missing
## [1] 31.7
##
##
## $`20`
## $`20`$min
## [1] -4.240691
##
## $`20`$max
## [1] 4.049516
##
## $`20`$pct_missing
## [1] 31.7
##
```

```
##
## $`21`
## $`21`$min
## [1] -4.240691
##
## $`21`$max
## [1] 4.049516
##
## $`21`$pct_missing
## [1] 31.7
##
##
## $`22`
## $`22`$min
## [1] -4.240691
##
## $`22`$max
## [1] 4.049516
##
## $`22`$pct_missing
## [1] 31.7
##
##
## $`23`
## $`23`$min
## [1] -4.240691
##
## $`23`$max
## [1] 4.049516
##
## $`23`$pct_missing
## [1] 31.7
##
##
## $`24`
## $`24`$min
## [1] -4.240691
##
## $`24`$max
## [1] 4.049516
##
## $`24`$pct_missing
## [1] 31.7
##
##
## $`25`
## $`25`$min
## [1] -4.240691
##
## $`25`$max
## [1] 4.049516
##
## $`25`$pct_missing
## [1] 31.7
```

```
##
##
## $`26`
## $`26`$min
## [1] -4.240691
##
## $`26`$max
## [1] 4.049516
##
## $`26`$pct_missing
## [1] 31.7
##
##
## $`27`
## $`27`$min
## [1] -4.240691
##
## $`27`$max
## [1] 4.049516
##
## $`27`$pct_missing
## [1] 31.7
##
##
## $`28`
## $`28`$min
## [1] -4.240691
##
## $`28`$max
## [1] 4.049516
##
## $`28`$pct_missing
## [1] 31.7
##
##
## $`29`
## $`29`$min
## [1] -4.240691
##
## $`29`$max
## [1] 4.049516
##
## $`29`$pct_missing
## [1] 31.7
##
##
## $`30`
## $`30`$min
## [1] -4.240691
##
## $`30`$max
## [1] 4.049516
##
## $`30`$pct_missing
```

```
## [1] 31.7
##
##
## $`31`
## $`31`$min
## [1] -4.240691
##
## $`31`$max
## [1] 4.049516
##
## $`31`$pct_missing
## [1] 31.7
##
##
## $`32`
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## [1] -4.240691
##
## $`32`$max
## [1] 4.049516
##
## $`32`$pct_missing
## [1] 31.7
##
##
## $`33`
## $`33`$min
## [1] -4.240691
##
## $`33`$max
## [1] 4.049516
##
## $`33`$pct_missing
## [1] 31.7
##
##
## $`34`
## $`34`$min
## [1] -4.240691
##
## $`34`$max
## [1] 4.049516
##
## $`34`$pct_missing
## [1] 31.7
##
##
## $`35`
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## [1] -4.240691
##
## $`35`$max
## [1] 4.049516
##
```

```
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##
##
## $`36`
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## [1] -4.240691
##
## $`36`$max
## [1] 4.049516
##
## $`36`$pct_missing
## [1] 31.7
##
##
## $`37`
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## [1] -4.240691
##
## $`37`$max
## [1] 4.049516
##
## $`37`$pct_missing
## [1] 31.7
##
##
## $`38`
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## [1] -4.240691
##
## $`38`$max
## [1] 4.049516
##
## $`38`$pct_missing
## [1] 31.7
##
##
## $`39`
## $`39`$min
## [1] -4.240691
##
## $`39`$max
## [1] 4.049516
##
## $`39`$pct_missing
## [1] 31.7
##
##
## $`40`
## $`40`$min
## [1] -4.240691
##
## $`40`$max
## [1] 4.049516
```

```
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## [1] 31.7
##
##
## $`41`
## $`41`$min
## [1] -4.240691
##
## $`41`$max
## [1] 4.049516
##
## $`41`$pct_missing
## [1] 31.7
##
##
## $`42`
## $`42`$min
## [1] -4.240691
##
## $`42`$max
## [1] 4.049516
##
## $`42`$pct_missing
## [1] 31.7
##
##
## $`43`
## $`43`$min
## [1] -4.240691
##
## $`43`$max
## [1] 4.049516
##
## $`43`$pct_missing
## [1] 31.7
##
##
## $`44`
## $`44`$min
## [1] -4.240691
##
## $`44`$max
## [1] 4.049516
##
## $`44`$pct_missing
## [1] 31.7
##
##
## $`45`
## $`45`$min
## [1] -4.240691
##
## $`45`$max
```

```
## [1] 4.049516
##
## $`45`$pct_missing
## [1] 31.7
##
##
## $`46`
## $`46`$min
## [1] -4.240691
##
## $`46`$max
## [1] 4.049516
##
## $`46`$pct_missing
## [1] 31.7
##
##
## $`47`
## $`47`$min
## [1] -4.240691
##
## $`47`$max
## [1] 4.049516
##
## $`47`$pct_missing
## [1] 31.7
##
##
## $`48`
## $`48`$min
## [1] -4.240691
##
## $`48`$max
## [1] 4.049516
##
## $`48`$pct_missing
## [1] 31.7
##
##
## $`49`
## $`49`$min
## [1] -4.240691
##
## $`49`$max
## [1] 4.049516
##
## $`49`$pct_missing
## [1] 31.7
##
##
## $`50`
## $`50`$min
## [1] -4.240691
##
```

```
## $`50`$max
## [1] 4.049516
##
## $`50`$pct_missing
## [1] 31.7
##
##
## $`51`
## $`51`$min
## [1] -4.240691
##
## $`51`$max
## [1] 4.049516
##
## $`51`$pct_missing
## [1] 31.7
##
##
## $`52`
## $`52`$min
## [1] -4.240691
##
## $`52`$max
## [1] 4.049516
##
## $`52`$pct_missing
## [1] 31.7
##
##
## $`53`
## $`53`$min
## [1] -4.240691
##
## $`53`$max
## [1] 4.049516
##
## $`53`$pct_missing
## [1] 31.7
##
##
## $`54`
## $`54`$min
## [1] -4.240691
##
## $`54`$max
## [1] 4.049516
##
## $`54`$pct_missing
## [1] 31.7
##
##
## $`55`
## $`55`$min
## [1] -4.240691
```

```
##
## $`55`$max
## [1] 4.049516
##
## $`55`$pct_missing
## [1] 31.7
##
##
## $`56`
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## [1] -4.240691
##
## $`56`$max
## [1] 4.049516
##
## $`56`$pct_missing
## [1] 31.7
##
##
## $`57`
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## [1] -4.240691
##
## $`57`$max
## [1] 4.049516
##
## $`57`$pct_missing
## [1] 31.7
##
##
## $`58`
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## [1] -4.240691
##
## $`58`$max
## [1] 4.049516
##
## $`58`$pct_missing
## [1] 31.7
##
##
## $`59`
## $`59`$min
## [1] -4.240691
##
## $`59`$max
## [1] 4.049516
##
## $`59`$pct_missing
## [1] 31.7
##
##
## $`60`
## $`60`$min
```

```
## [1] -4.240691
##
## $`60`$max
## [1] 4.049516
##
## $`60`$pct_missing
## [1] 31.7
##
##
## $`61`
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## [1] -4.240691
##
## $`61`$max
## [1] 4.049516
##
## $`61`$pct_missing
## [1] 31.7
##
##
## $`62`
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## [1] -4.240691
##
## $`62`$max
## [1] 4.049516
##
## $`62`$pct_missing
## [1] 31.7
##
##
## $`63`
## $`63`$min
## [1] -4.240691
##
## $`63`$max
## [1] 4.049516
##
## $`63`$pct_missing
## [1] 31.7
##
##
## $`64`
## $`64`$min
## [1] -4.240691
##
## $`64`$max
## [1] 4.049516
##
## $`64`$pct_missing
## [1] 31.7
##
##
## $`65`
```

```
## $`65`$min
## [1] -4.240691
##
## $`65`$max
## [1] 4.049516
##
## $`65`$pct_missing
## [1] 31.7
##
##
## $`66`
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## [1] -4.240691
##
## $`66`$max
## [1] 4.049516
##
## $`66`$pct_missing
## [1] 31.7
##
##
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## [1] -4.240691
##
## $`67`$max
## [1] 4.049516
##
## $`67`$pct_missing
## [1] 31.7
##
##
## $`68`
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## [1] -4.240691
##
## $`68`$max
## [1] 4.049516
##
## $`68`$pct_missing
## [1] 31.7
##
##
## $`69`
## $`69`$min
## [1] -4.240691
##
## $`69`$max
## [1] 4.049516
##
## $`69`$pct_missing
## [1] 31.7
##
##
```

```
## $`70`
## $`70`$min
## [1] -4.240691
##
## $`70`$max
## [1] 4.049516
##
## $`70`$pct_missing
## [1] 31.7
##
##
## $`71`
## $`71`$min
## [1] -4.240691
##
## $`71`$max
## [1] 4.049516
##
## $`71`$pct_missing
## [1] 31.7
##
##
## $`72`
## $`72`$min
## [1] -4.240691
##
## $`72`$max
## [1] 4.049516
##
## $`72`$pct_missing
## [1] 31.7
##
##
## $`73`
## $`73`$min
## [1] -4.240691
##
## $`73`$max
## [1] 4.049516
##
## $`73`$pct_missing
## [1] 31.7
##
##
## $`74`
## $`74`$min
## [1] -4.240691
##
## $`74`$max
## [1] 4.049516
##
## $`74`$pct_missing
## [1] 31.7
##
```

```
##
## $`75`
## $`75`$min
## [1] -4.240691
##
## $`75`$max
## [1] 4.049516
##
## $`75`$pct_missing
## [1] 31.7
##
##
## $`76`
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## [1] -4.240691
##
## $`76`$max
## [1] 4.049516
##
## $`76`$pct_missing
## [1] 31.7
##
##
## $`77`
## $`77`$min
## [1] -4.240691
##
## $`77`$max
## [1] 4.049516
##
## $`77`$pct_missing
## [1] 31.7
##
##
## $`78`
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## [1] -4.240691
##
## $`78`$max
## [1] 4.049516
##
## $`78`$pct_missing
## [1] 31.7
##
##
## $`79`
## $`79`$min
## [1] -4.240691
##
## $`79`$max
## [1] 4.049516
##
## $`79`$pct_missing
## [1] 31.7
```

```
##
##
## $`80`
## $`80`$min
## [1] -4.240691
##
## $`80`$max
## [1] 4.049516
##
## $`80`$pct_missing
## [1] 31.7
##
##
## $`81`
## $`81`$min
## [1] -4.240691
##
## $`81`$max
## [1] 4.049516
##
## $`81`$pct_missing
## [1] 31.7
##
##
## $`82`
## $`82`$min
## [1] -4.240691
##
## $`82`$max
## [1] 4.049516
##
## $`82`$pct_missing
## [1] 31.7
##
##
## $`83`
## $`83`$min
## [1] -4.240691
##
## $`83`$max
## [1] 4.049516
##
## $`83`$pct_missing
## [1] 31.7
##
##
## $`84`
## $`84`$min
## [1] -4.240691
##
## $`84`$max
## [1] 4.049516
##
## $`84`$pct_missing
```

```
## [1] 31.7
##
##
## $`85`
## $`85`$min
## [1] -4.240691
##
## $`85`$max
## [1] 4.049516
##
## $`85`$pct_missing
## [1] 31.7
##
##
## $`86`
## $`86`$min
## [1] -4.240691
##
## $`86`$max
## [1] 4.049516
##
## $`86`$pct_missing
## [1] 31.7
##
##
## $`87`
## $`87`$min
## [1] -4.240691
##
## $`87`$max
## [1] 4.049516
##
## $`87`$pct_missing
## [1] 31.7
##
##
## $`88`
## $`88`$min
## [1] -4.240691
##
## $`88`$max
## [1] 4.049516
##
## $`88`$pct_missing
## [1] 31.7
##
##
## $`89`
## $`89`$min
## [1] -4.240691
##
## $`89`$max
## [1] 4.049516
##
```

```
## $`89`$pct_missing
## [1] 31.7
##
##
## $`90`
## $`90`$min
## [1] -4.240691
##
## $`90`$max
## [1] 4.049516
##
## $`90`$pct_missing
## [1] 31.7
##
##
## $`91`
## $`91`$min
## [1] -4.240691
##
## $`91`$max
## [1] 4.049516
##
## $`91`$pct_missing
## [1] 31.7
##
##
## $`92`
## $`92`$min
## [1] -4.240691
##
## $`92`$max
## [1] 4.049516
##
## $`92`$pct_missing
## [1] 31.7
##
##
## $`93`
## $`93`$min
## [1] -4.240691
##
## $`93`$max
## [1] 4.049516
##
## $`93`$pct_missing
## [1] 31.7
##
##
## $`94`
## $`94`$min
## [1] -4.240691
##
## $`94`$max
## [1] 4.049516
```

```
##
## $`94`$pct_missing
## [1] 31.7
##
##
## $`95`
## $`95`$min
## [1] -4.240691
##
## $`95`$max
## [1] 4.049516
##
## $`95`$pct_missing
## [1] 31.7
##
##
## $`96`
## $`96`$min
## [1] -4.240691
##
## $`96`$max
## [1] 4.049516
##
## $`96`$pct_missing
## [1] 31.7
##
##
## $`97`
## $`97`$min
## [1] -4.240691
##
## $`97`$max
## [1] 4.049516
##
## $`97`$pct_missing
## [1] 31.7
##
##
## $`98`
## $`98`$min
## [1] -4.240691
##
## $`98`$max
## [1] 4.049516
##
## $`98`$pct_missing
## [1] 31.7
##
##
## $`99`
## $`99`$min
## [1] -4.240691
##
## $`99`$max
```

```
## [1] 4.049516
##
## $`99`$pct_missing
## [1] 31.7
##
##
## $`100`
## $`100`$min
## [1] -4.240691
##
## $`100`$max
## [1] 4.049516
##
## $`100`$pct_missing
## [1] 31.7
```

- 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(10)
n<- 1000
v<- rnorm(n, mean=-10, sd= sqrt(100))
v
```

```
##    [1]  -9.812538291 -11.842525421 -23.713305499 -15.991677158  -7.054548734
##    [6]  -6.102056993 -22.080761754 -13.636760175 -26.266726817 -12.564783941
##   [11]   1.017795031  -2.442184920 -12.382335560  -0.125552966  -2.586098716
##   [16]  -9.106527335 -19.549438562 -11.951503847  -0.744787379  -5.170214752
##   [21] -15.963106367 -31.852868382 -16.748659379 -31.190611919 -22.651980215
##   [26] -13.736615552 -16.875554304 -18.721588267 -11.017610062 -12.537805301
##   [31] -28.537404545 -10.779460661  -0.314336595  -8.150740400 -23.799435783
##   [36] -24.355143624  -6.379127714 -27.590867538 -13.245440096 -16.515629885
##   [41]   0.865513994 -17.625448800 -18.286625350  -1.655260969 -19.676519868
##   [46] -10.288153355  -7.674748474 -13.012086815 -16.776145831  -3.447723638
##   [51] -14.006375470 -13.345565651   3.679539532  11.377671037  -4.941807355
##   [56]  -2.136576158 -19.022119442  -4.671030077 -16.458942535  -7.090125116
##   [61] -22.375944689 -14.561762751 -18.303226547  -6.598843563   0.663763957
##   [66]   2.161258381  -2.643093424 -14.812086173  -4.372552371 -22.463197119
##   [71]  -6.190777874 -24.304272528 -20.484455049 -12.185035505 -24.899362367
##   [76]   1.727062812 -24.798270216 -14.303878161 -20.516386420   5.225863441
##   [81]  -4.071719454 -12.226615090  -2.871057238  -2.833991663  -5.597581356
##   [86]  -8.411693787  -3.402358617  12.205196629 -21.839450741 -10.739558345
##   [91] -14.163546749 -11.914823438  -9.304552186   1.553483180  -4.050426530
##   [96] -24.196451084 -26.066772454  -1.070741004  -8.518320448   2.270283901
##  [101] -17.618043392  -5.806245941 -20.399433646  -2.884260340 -16.332130150
##  [106]  -4.368253355  -3.390133142 -26.580508573   0.281679770   1.279536140
##  [111] -22.801546034   1.288682274 -14.641345272 -13.157602095  -0.757068532
##  [116]  -9.228552760   0.399236051  -2.581137933   2.555448583  -0.490810335
##  [121] -14.813656073  -7.971182220 -10.317397438 -21.955803003  -3.763187632
##  [126] -19.148044837  -7.512419923 -20.626227932 -13.639822472 -22.069948534
##  [131]   4.292127814  -3.665641090 -29.968156177 -16.818321731 -14.600554793
##  [136] -19.830691941  -5.046682871  -2.741824998  -3.327012681  -0.452135635
##  [141] -26.753321793 -22.051853925 -29.632524892   4.707523098  -6.275276614
##  [146]   0.658793340  -4.693501316  -8.980165541   3.377824658  -9.127652315
##  [151] -13.911042074 -12.498674846   1.551047459 -18.647272398 -18.666783424
```

```
##  [156] -33.210170303  -3.911698311   1.500060482 -21.995976717 -25.800007545
##  [161]  -3.468338064 -15.494084851  -4.789454747 -16.994030664 -14.389093148
##  [166] -16.773192961  -0.408588052 -24.681733295  -8.162361073 -24.351471827
##  [171] -21.373998981 -14.146453269  -8.560657118   0.620243307 -15.707939027
##  [176]   2.771813764  -7.717106795 -13.088130645  -0.401708694  -4.511776252
##  [181]  -5.744869062  -3.564999649 -23.603061435 -11.985061064  -3.806973231
##  [186]  10.682096050 -13.052847542  -7.187543878  -3.086826633  -9.536385619
##  [191]  -8.869706384  -0.046681257 -16.811513613 -22.770572467 -24.686977498
##  [196] -13.134740665 -27.036594927 -23.505146561 -21.020936772 -20.995430145
##  [201]   2.155137762  -6.691235149   3.902751193  -1.279530150 -20.808170227
##  [206]  -5.041784086   0.526275562 -22.746499502 -11.936667284 -22.950836426
##  [211]  -8.581197153   2.617150520 -14.315003281 -28.227125895  -6.474560412
##  [216] -23.484514415  -2.923116821 -14.108909368 -14.460451799 -20.411563017
##  [221] -13.292247162 -12.828216241  -5.675708745 -13.076070951 -10.566363079
##  [226]  -2.664845798  -9.026883803   6.308917366  -4.393893010   3.295647645
##  [231] -12.788234956 -22.667315441 -12.491483940  -9.820115854  -6.229272729
##  [236]  -2.039914425 -18.406774171 -32.054717508 -21.280559911 -23.413099588
##  [241]   6.051140429  -2.555762715  -1.379177940  -6.048441845  -4.908813037
##  [246] -11.225501258  -9.074153528 -13.578799143 -13.596552243   0.285707209
##  [251]   0.778925925  -0.682187848 -24.607938670 -19.060755762 -16.803478314
##  [256]   0.631660368 -16.924131521 -21.336282653 -20.946154338 -20.129036188
##  [261]  -5.897226741  -5.222595581 -33.298795451  -9.837445348  -0.196464769
##  [266]  -1.936517352  -8.803991111 -34.366156043  -9.689775239 -13.357466980
##  [271] -12.637761619 -13.558524609 -14.811547983  -7.772645322  14.299103187
##  [276]   4.962981187 -17.172082028 -14.670539002  -3.370765471  13.001768909
##  [281]  -6.724898588  -9.361365184 -21.395609400   1.804102036  -9.586115230
##  [286] -22.135935634  -9.268042234 -12.573245943  -7.331935891   3.877243257
##  [291]  -8.069203650  -4.076833774 -18.299745269  -6.074267184  -6.151323893
##  [296]   0.510446657   1.557974846 -20.344379589 -12.544680658   2.736842661
##  [301]   5.025446390  -4.095905329 -16.306854514  -2.076504627  -8.746154299
##  [306]  -6.772450288 -14.455832095  -2.331560655 -24.035030218 -21.760467796
##  [311]  -4.884035308   3.167652638  13.929129471 -10.677694085 -12.037850665
##  [316]   9.964344522   5.432177943 -22.283376263  16.444879922  -2.429862917
##  [321]   0.553451922  -0.420551047  -1.661209424 -11.692755700 -14.044336431
##  [326]  -7.043984263 -12.318745072 -14.480782316  -9.776892034  -9.555327028
##  [331]  -5.192788347  -3.643801448 -30.007423931 -16.906555038 -11.306451893
##  [336] -13.442517830 -10.524128240  -9.038760795  -7.335929468  -4.452065247
##  [341]   2.354458785  -7.148666187 -14.587929278  -3.765219781 -17.239950916
##  [346]   6.194187035 -16.166734102  -6.154589426  11.145213128 -20.285673663
##  [351] -18.867879657   2.711460013 -26.050854413   1.222733829  11.584386418
##  [356]  -5.717533870   2.011786905   0.316901162  -3.461257473  10.120817732
##  [361]   0.946298418  -2.735906459 -23.996571366 -22.877951633 -19.684154775
##  [366] -27.366857577  -1.683026419 -17.589531086  11.550770011 -14.232588802
##  [371] -10.056499367  -5.996382714 -13.656778020 -14.291438352  -7.553028732
##  [376]  12.197762487  -6.857301921 -15.637850745 -24.856961583  -5.847014069
##  [381] -15.280636827 -13.504706175  -2.693780627 -15.566241651 -24.497605362
##  [386] -20.519964281 -16.828386188 -16.129411786   8.907800351 -11.454105336
##  [391] -16.394237206 -14.111760452  -6.572081216 -21.332467546  -9.339296975
##  [396]  -9.620002340  -0.789352525  11.349656385 -15.998269316   2.444464586
##  [401] -10.794570171   1.817515498  11.861440627  -5.938250693 -17.383591046
##  [406] -29.564867029 -29.500457016 -19.409978157   1.977867686 -16.242393904
##  [411] -11.328696551 -10.172209222 -14.596292822   4.729367905  11.693196126
##  [416] -40.014313063 -27.719855831 -13.648392228  -6.254662193 -22.340779267
##  [421]  -5.251065780   2.330574571 -15.931286568  -2.477375607  -3.879544931
```

```
##  [426] -12.286573653 -17.048393499   2.295160472   5.185151299   3.450941804
##  [431] -11.236915289  -0.660975464  -9.805031544  -1.691478903 -13.044946680
##  [436] -10.592812771   0.073966974 -23.777950860 -20.042027270 -10.232803049
##  [441]   5.467472738 -17.593632510   0.067926575  -7.257850837 -10.803823646
##  [446] -19.035524953  -5.268548970   3.884889779  -9.652539062 -22.925850281
##  [451]   1.639675049 -25.233845971 -35.183350536 -17.075292306 -12.874328827
##  [456] -14.353083115 -13.430787707 -10.393108840  -1.130340123 -13.599484008
##  [461] -17.289542706   7.517456193 -10.860385902   1.063630159 -10.191778372
##  [466] -24.934601785  17.006366231 -17.436944222   0.651949809 -10.320817317
##  [471] -15.399596893 -29.256435676   0.078313762 -12.792347968 -22.495658553
##  [476]   2.484911279 -11.922133766  -0.880237689 -31.582696800   2.896105323
##  [481] -14.281099656 -12.550028930   3.271582388  -1.613098794 -24.650006772
##  [486] -16.162526979  -8.938941606 -28.440167577 -26.164228537  -7.723232959
##  [491]  -0.787832981 -13.312034395   2.872340310  -9.427391975 -32.039331252
##  [496] -15.229103483   0.807853101 -12.431413376 -19.094465623 -18.682995074
##  [501]  -1.305249551 -16.800095978  -8.267854613 -11.594380391  -2.065005674
##  [506]   6.943504914   2.399686864  -9.705632569   6.572144990   1.312231402
##  [511] -24.024106321  -8.432295389  -1.324914036 -10.332351571  -0.459354437
##  [516]   1.300967252  -6.063026879  -6.231916720 -12.517429070  -4.959051092
##  [521] -23.298034713 -11.182994525 -16.332484666  -3.223086553 -12.978817648
##  [526]  -3.720777529   6.784307280 -34.000025406 -23.498428851   2.020078958
##  [531]   2.938427194 -10.595943462 -16.850623452 -24.534393044   2.941265612
##  [536]   1.761690894  -1.359549218 -32.967325235 -23.918100119 -23.858767450
##  [541] -20.730468439 -19.414255032 -15.864343097   0.347212201  -5.410377933
##  [546] -21.934450720  -2.081107283 -27.723049108 -15.877224220 -22.823703126
##  [551] -13.121346610 -16.987753006 -36.438497677  -1.749776232  -6.930736868
##  [556] -10.580394582  -0.734305892 -12.186918606  -0.068665026 -29.233343425
##  [561] -20.527151845  -1.096022381  25.411402776  -2.584892573 -12.074712541
##  [566]  -8.200615458   4.263648494 -14.431667895  -6.328100133  -3.041783039
##  [571]  -0.665552714   4.918890826   1.595229902  -7.732040431 -22.954651847
##  [576] -10.627786917  -0.067170631 -20.059309400 -17.509849476   7.440163824
##  [581] -21.876000915 -14.169704177 -25.698201594 -12.804740353 -15.853269639
##  [586]  -3.396808024 -16.375125490 -15.390216332  -0.484797664 -11.055798458
##  [591] -13.740692728 -11.762325808  -7.235166921  -7.636674073  10.616741594
##  [596] -22.900599858  -4.288105525   7.853902267  -7.870597569  -1.153078539
##  [601] -19.019702644 -10.547499580 -23.567547111  -6.827694229   3.957191193
##  [606] -22.112238168 -12.041416608 -25.524513261  -4.819503314 -14.188403032
##  [611] -27.094532157  14.831626714  -5.019662649 -16.738682052 -18.869813956
##  [616] -27.313773509  -3.954508786 -18.712750782  -2.746583536 -10.307319801
##  [621] -11.172223743  -9.017770614 -16.768572218 -10.492463549 -15.607197599
##  [626]  13.991548652 -10.898721016 -18.216484178 -12.869617616  -8.687211260
##  [631] -20.620839504  -2.664189643  -6.773078015 -13.489797713   2.835256642
##  [636] -20.144880489 -15.100642741 -11.671697462 -13.026677856  10.264704725
##  [641]  -0.990943616  -8.645709595 -12.012889542 -18.068367410  -3.558758762
##  [646] -13.366591207 -27.317035112  -7.380793374 -19.166975981 -15.685644751
##  [651] -18.658204418  -1.745060882 -18.001322842  -0.241699132  17.000755307
##  [656] -11.353895969 -11.060311640 -23.440638051  -5.568781714  -0.388822583
##  [661] -12.414358167  -9.170451089 -13.617247578  -6.661398002  -7.343905790
##  [666]  20.129057466 -13.447301377   0.625574533 -17.296850740  -9.434522790
##  [671]  -5.321702881 -13.726452506  -7.898383123   2.896083057 -26.268395499
##  [676] -17.835365097  -4.890868965   2.176260559  -6.948907523  -7.897063667
##  [681]  -5.311340345 -29.043425723   2.384022846  -6.090011085 -10.311989167
##  [686] -26.188005218  -5.487337219 -16.908433636   4.054456219 -27.013426878
##  [691]  -8.077544027 -17.029567615 -18.085558633 -16.381987415   7.373454280
```

```
##  [696] -32.604782631 -26.124720939  -3.462598012  -0.971192714  -2.453915122
##  [701] -12.268107688 -16.959686276  -4.933526427  -3.837657064 -26.668792745
##  [706] -13.362542257  -4.928201433 -26.973907015 -12.069272239 -13.985970282
##  [711] -21.886198275  -5.474345959  -7.924102961 -22.101223761  -2.325849457
##  [716] -15.990276913 -25.609727728 -19.956640429   0.932510084  -0.828571140
##  [721] -17.730493551 -14.758358176 -21.307031840 -14.288354317 -18.395836499
##  [726] -16.009866729 -17.738907782 -18.924923512 -10.357318471 -13.041781024
##  [731] -40.121637836 -30.085230578 -10.463714094 -13.595370645 -11.950216617
##  [736] -25.144701355 -18.920330471 -18.627064914  -4.480458520 -11.882339133
##  [741] -13.251467436 -15.369384491 -13.714774127  -2.771929763   2.056918834
##  [746]   1.841531257  -3.288095646   1.755020734  -8.114735273  -5.009364032
##  [751] -29.476183114  -5.792627538   1.734762498 -24.462315570 -13.667512059
##  [756] -16.077962349  -6.801286226   0.998476722 -14.060366276  14.107464268
##  [761]   1.588998848  -6.616104084  -5.438226561 -13.140446664   4.043440202
##  [766] -14.102699491 -10.881025162  -6.751244053   1.850998002 -12.555085734
##  [771]  -1.155520791 -14.885610696 -17.273761732 -21.882552729 -15.379424159
##  [776]  -8.806487827   3.181780955   4.430805577  -7.509737884  -1.842976731
##  [781] -17.346078064  -7.418467220 -18.528607688  -7.843512414 -17.092102120
##  [786]  -2.891344768 -14.473718588 -13.382983042  -4.827665779  -9.012964057
##  [791]  -2.563143842 -12.785501415  -4.609283194 -10.883394697 -17.457575082
##  [796] -25.600784511   0.829565254 -33.410560026  -7.936947340  -2.352574288
##  [801] -31.250685810  -4.788213337 -10.464229000 -21.494717210  -3.706616923
##  [806] -17.264714760 -13.864173223 -16.717143899  -0.996138096  -1.131583094
##  [811]  -6.097218881 -19.275114902  -2.541607712  -5.051758434 -10.219314617
##  [816]  -4.119776737  -2.435089260 -14.940262726 -17.333156286 -10.010203940
##  [821]  -1.941743032   1.093093819 -13.096794822 -19.085782481  -7.369738723
##  [826] -10.209178076 -12.123425076 -20.311039198  -8.604892603  -8.337820154
##  [831] -19.846596491  -9.773659292  -2.146699673 -21.791895243   9.107907776
##  [836] -15.380014949  -1.157235710  -8.526903633 -20.084273629  -1.618110078
##  [841] -21.682391374  -5.456818671  -7.874271325 -15.530863474  -9.765699748
##  [846]  -3.518211096 -27.427947352  -4.048373391 -18.785290130  -3.555624287
##  [851] -16.290985027 -10.982001897  -3.157823008 -23.846860310   5.549455860
##  [856] -18.143413419 -18.436310859   0.249274259  -8.842966236  -7.585059601
##  [861] -23.908161417   5.260608446  -9.534837633   2.399823597  -6.914273645
##  [866]  -2.143723955   1.174787047 -10.049822723 -11.784182102  -3.037709311
##  [871]  -4.782027915 -14.478265902  -5.945993960 -17.369644247  -7.442519856
##  [876] -12.849335049 -10.311213250 -14.858588870 -11.350880842 -24.807187228
##  [881]   2.563691257  -7.909583501  -6.868432104   0.751482387 -12.866251746
##  [886] -10.319774274 -17.427333966  10.852201922  -1.451095896   0.004459961
##  [891] -21.841179101 -25.411025551 -12.117330008  -8.296474300 -16.907773744
##  [896]   6.977207390 -10.726899626 -17.176088563 -14.165144383  11.935867611
##  [901]  -4.576521742   0.236676090  -1.871738913   3.010270774  -4.320435891
##  [906] -11.200714423 -14.920027063  -7.992280246  -8.352007012  -3.063423038
##  [911]  -8.666757467 -17.394631586 -13.975188152  -7.428413606 -12.801739191
##  [916]   0.079675921   1.552196240 -12.027949491 -13.214095471 -26.210539171
##  [921]  -4.318947410  -3.287197528   4.602595218 -26.377193743   2.985010822
##  [926] -11.536998288   5.791488456  10.552351855   2.844866509  -5.825966827
##  [931]   1.598536073  -5.084097443   1.020087177  -4.314295697 -13.639170851
##  [936]  -8.630436292  -2.757245729   5.399816059  -0.130076653 -19.460219980
##  [941] -16.126806842   2.868865903 -15.566501599 -10.229777222   3.247411227
##  [946]  -7.361023310  -1.586609809 -12.641374890  -1.132307081  -7.745142443
##  [951]  -4.551672753   1.762507268 -13.135752419  -4.946233115   5.397012986
##  [956]   4.910027107  -7.563105153 -14.153143264 -30.351727622 -16.433578978
##  [961]  -9.461785190 -13.895618839   8.778255534 -24.576067267  -2.761446216
```

```
##  [966] -22.180762615 -13.057588699  -9.756022834  -6.477338988  -1.762102445
##  [971]  -4.022134389   2.956374644 -15.780661792  -8.270250195 -15.811962460
##  [976] -17.825905963 -26.668292043 -17.134732483 -15.066758278 -16.951839441
##  [981]  -4.583921888 -15.810772964  -5.691679490  -3.282988104 -14.335073055
##  [986] -17.809834289  -5.837018176 -18.216205996  -7.889241096  -2.451768303
##  [991]   7.801097527  -3.340523181 -10.107338195 -22.010546064 -16.433977845
##  [996]  -2.027076895  -4.717517256  -7.163302612 -10.121393049 -11.919137775
```

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

```
set.seed(10)
n<- 1000
v<- rnorm(n, mean=-10, sd= sqrt(100))
v
```

```
##    [1]  -9.812538291 -11.842525421 -23.713305499 -15.991677158  -7.054548734
##    [6]  -6.102056993 -22.080761754 -13.636760175 -26.266726817 -12.564783941
##   [11]   1.017795031  -2.442184920 -12.382335560  -0.125552966  -2.586098716
##   [16]  -9.106527335 -19.549438562 -11.951503847  -0.744787379  -5.170214752
##   [21] -15.963106367 -31.852868382 -16.748659379 -31.190611919 -22.651980215
##   [26] -13.736615552 -16.875554304 -18.721588267 -11.017610062 -12.537805301
##   [31] -28.537404545 -10.779460661  -0.314336595  -8.150740400 -23.799435783
##   [36] -24.355143624  -6.379127714 -27.590867538 -13.245440096 -16.515629885
##   [41]   0.865513994 -17.625448800 -18.286625350  -1.655260969 -19.676519868
##   [46] -10.288153355  -7.674748474 -13.012086815 -16.776145831  -3.447723638
##   [51] -14.006375470 -13.345565651   3.679539532  11.377671037  -4.941807355
##   [56]  -2.136576158 -19.022119442  -4.671030077 -16.458942535  -7.090125116
##   [61] -22.375944689 -14.561762751 -18.303226547  -6.598843563   0.663763957
##   [66]   2.161258381  -2.643093424 -14.812086173  -4.372552371 -22.463197119
##   [71]  -6.190777874 -24.304272528 -20.484455049 -12.185035505 -24.899362367
##   [76]   1.727062812 -24.798270216 -14.303878161 -20.516386420   5.225863441
##   [81]  -4.071719454 -12.226615090  -2.871057238  -2.833991663  -5.597581356
##   [86]  -8.411693787  -3.402358617  12.205196629 -21.839450741 -10.739558345
##   [91] -14.163546749 -11.914823438  -9.304552186   1.553483180  -4.050426530
##   [96] -24.196451084 -26.066772454  -1.070741004  -8.518320448   2.270283901
##  [101] -17.618043392  -5.806245941 -20.399433646  -2.884260340 -16.332130150
##  [106]  -4.368253355  -3.390133142 -26.580508573   0.281679770   1.279536140
##  [111] -22.801546034   1.288682274 -14.641345272 -13.157602095  -0.757068532
##  [116]  -9.228552760   0.399236051  -2.581137933   2.555448583  -0.490810335
##  [121] -14.813656073  -7.971182220 -10.317397438 -21.955803003  -3.763187632
##  [126] -19.148044837  -7.512419923 -20.626227932 -13.639822472 -22.069948534
##  [131]   4.292127814  -3.665641090 -29.968156177 -16.818321731 -14.600554793
##  [136] -19.830691941  -5.046682871  -2.741824998  -3.327012681  -0.452135635
##  [141] -26.753321793 -22.051853925 -29.632524892   4.707523098  -6.275276614
##  [146]   0.658793340  -4.693501316  -8.980165541   3.377824658  -9.127652315
##  [151] -13.911042074 -12.498674846   1.551047459 -18.647272398 -18.666783424
##  [156] -33.210170303  -3.911698311   1.500060482 -21.995976717 -25.800007545
##  [161]  -3.468338064 -15.494084851  -4.789454747 -16.994030664 -14.389093148
##  [166] -16.773192961  -0.408588052 -24.681733295  -8.162361073 -24.351471827
##  [171] -21.373998981 -14.146453269  -8.560657118   0.620243307 -15.707939027
##  [176]   2.771813764  -7.717106795 -13.088130645  -0.401708694  -4.511776252
##  [181]  -5.744869062  -3.564999649 -23.603061435 -11.985061064  -3.806973231
##  [186]  10.682096050 -13.052847542  -7.187543878  -3.086826633  -9.536385619
##  [191]  -8.869706384  -0.046681257 -16.811513613 -22.770572467 -24.686977498
##  [196] -13.134740665 -27.036594927 -23.505146561 -21.020936772 -20.995430145
```

```
##  [201]   2.155137762  -6.691235149   3.902751193  -1.279530150 -20.808170227
##  [206]  -5.041784086   0.526275562 -22.746499502 -11.936667284 -22.950836426
##  [211]  -8.581197153   2.617150520 -14.315003281 -28.227125895  -6.474560412
##  [216] -23.484514415  -2.923116821 -14.108909368 -14.460451799 -20.411563017
##  [221] -13.292247162 -12.828216241  -5.675708745 -13.076070951 -10.566363079
##  [226]  -2.664845798  -9.026883803   6.308917366  -4.393893010   3.295647645
##  [231] -12.788234956 -22.667315441 -12.491483940  -9.820115854  -6.229272729
##  [236]  -2.039914425 -18.406774171 -32.054717508 -21.280559911 -23.413099588
##  [241]   6.051140429  -2.555762715  -1.379177940  -6.048441845  -4.908813037
##  [246] -11.225501258  -9.074153528 -13.578799143 -13.596552243   0.285707209
##  [251]   0.778925925  -0.682187848 -24.607938670 -19.060755762 -16.803478314
##  [256]   0.631660368 -16.924131521 -21.336282653 -20.946154338 -20.129036188
##  [261]  -5.897226741  -5.222595581 -33.298795451  -9.837445348  -0.196464769
##  [266]  -1.936517352  -8.803991111 -34.366156043  -9.689775239 -13.357466980
##  [271] -12.637761619 -13.558524609 -14.811547983  -7.772645322  14.299103187
##  [276]   4.962981187 -17.172082028 -14.670539002  -3.370765471  13.001768909
##  [281]  -6.724898588  -9.361365184 -21.395609400   1.804102036  -9.586115230
##  [286] -22.135935634  -9.268042234 -12.573245943  -7.331935891   3.877243257
##  [291]  -8.069203650  -4.076833774 -18.299745269  -6.074267184  -6.151323893
##  [296]   0.510446657   1.557974846 -20.344379589 -12.544680658   2.736842661
##  [301]   5.025446390  -4.095905329 -16.306854514  -2.076504627  -8.746154299
##  [306]  -6.772450288 -14.455832095  -2.331560655 -24.035030218 -21.760467796
##  [311]  -4.884035308   3.167652638  13.929129471 -10.677694085 -12.037850665
##  [316]   9.964344522   5.432177943 -22.283376263  16.444879922  -2.429862917
##  [321]   0.553451922  -0.420551047  -1.661209424 -11.692755700 -14.044336431
##  [326]  -7.043984263 -12.318745072 -14.480782316  -9.776892034  -9.555327028
##  [331]  -5.192788347  -3.643801448 -30.007423931 -16.906555038 -11.306451893
##  [336] -13.442517830 -10.524128240  -9.038760795  -7.335929468  -4.452065247
##  [341]   2.354458785  -7.148666187 -14.587929278  -3.765219781 -17.239950916
##  [346]   6.194187035 -16.166734102  -6.154589426  11.145213128 -20.285673663
##  [351] -18.867879657   2.711460013 -26.050854413   1.222733829  11.584386418
##  [356]  -5.717533870   2.011786905   0.316901162  -3.461257473  10.120817732
##  [361]   0.946298418  -2.735906459 -23.996571366 -22.877951633 -19.684154775
##  [366] -27.366857577  -1.683026419 -17.589531086  11.550770011 -14.232588802
##  [371] -10.056499367  -5.996382714 -13.656778020 -14.291438352  -7.553028732
##  [376]  12.197762487  -6.857301921 -15.637850745 -24.856961583  -5.847014069
##  [381] -15.280636827 -13.504706175  -2.693780627 -15.566241651 -24.497605362
##  [386] -20.519964281 -16.828386188 -16.129411786   8.907800351 -11.454105336
##  [391] -16.394237206 -14.111760452  -6.572081216 -21.332467546  -9.339296975
##  [396]  -9.620002340  -0.789352525  11.349656385 -15.998269316   2.444464586
##  [401] -10.794570171   1.817515498  11.861440627  -5.938250693 -17.383591046
##  [406] -29.564867029 -29.500457016 -19.409978157   1.977867686 -16.242393904
##  [411] -11.328696551 -10.172209222 -14.596292822   4.729367905  11.693196126
##  [416] -40.014313063 -27.719855831 -13.648392228  -6.254662193 -22.340779267
##  [421]  -5.251065780   2.330574571 -15.931286568  -2.477375607  -3.879544931
##  [426] -12.286573653 -17.048393499   2.295160472   5.185151299   3.450941804
##  [431] -11.236915289  -0.660975464  -9.805031544  -1.691478903 -13.044946680
##  [436] -10.592812771   0.073966974 -23.777950860 -20.042027270 -10.232803049
##  [441]   5.467472738 -17.593632510   0.067926575  -7.257850837 -10.803823646
##  [446] -19.035524953  -5.268548970   3.884889779  -9.652539062 -22.925850281
##  [451]   1.639675049 -25.233845971 -35.183350536 -17.075292306 -12.874328827
##  [456] -14.353083115 -13.430787707 -10.393108840  -1.130340123 -13.599484008
##  [461] -17.289542706   7.517456193 -10.860385902   1.063630159 -10.191778372
##  [466] -24.934601785  17.006366231 -17.436944222   0.651949809 -10.320817317
```

```
##  [471] -15.399596893 -29.256435676   0.078313762 -12.792347968 -22.495658553
##  [476]   2.484911279 -11.922133766  -0.880237689 -31.582696800   2.896105323
##  [481] -14.281099656 -12.550028930   3.271582388  -1.613098794 -24.650006772
##  [486] -16.162526979  -8.938941606 -28.440167577 -26.164228537  -7.723232959
##  [491]  -0.787832981 -13.312034395   2.872340310  -9.427391975 -32.039331252
##  [496] -15.229103483   0.807853101 -12.431413376 -19.094465623 -18.682995074
##  [501]  -1.305249551 -16.800095978  -8.267854613 -11.594380391  -2.065005674
##  [506]   6.943504914   2.399686864  -9.705632569   6.572144990   1.312231402
##  [511] -24.024106321  -8.432295389  -1.324914036 -10.332351571  -0.459354437
##  [516]   1.300967252  -6.063026879  -6.231916720 -12.517429070  -4.959051092
##  [521] -23.298034713 -11.182994525 -16.332484666  -3.223086553 -12.978817648
##  [526]  -3.720777529   6.784307280 -34.000025406 -23.498428851   2.020078958
##  [531]   2.938427194 -10.595943462 -16.850623452 -24.534393044   2.941265612
##  [536]   1.761690894  -1.359549218 -32.967325235 -23.918100119 -23.858767450
##  [541] -20.730468439 -19.414255032 -15.864343097   0.347212201  -5.410377933
##  [546] -21.934450720  -2.081107283 -27.723049108 -15.877224220 -22.823703126
##  [551] -13.121346610 -16.987753006 -36.438497677  -1.749776232  -6.930736868
##  [556] -10.580394582  -0.734305892 -12.186918606  -0.068665026 -29.233343425
##  [561] -20.527151845  -1.096022381  25.411402776  -2.584892573 -12.074712541
##  [566]  -8.200615458   4.263648494 -14.431667895  -6.328100133  -3.041783039
##  [571]  -0.665552714   4.918890826   1.595229902  -7.732040431 -22.954651847
##  [576] -10.627786917  -0.067170631 -20.059309400 -17.509849476   7.440163824
##  [581] -21.876000915 -14.169704177 -25.698201594 -12.804740353 -15.853269639
##  [586]  -3.396808024 -16.375125490 -15.390216332  -0.484797664 -11.055798458
##  [591] -13.740692728 -11.762325808  -7.235166921  -7.636674073  10.616741594
##  [596] -22.900599858  -4.288105525   7.853902267  -7.870597569  -1.153078539
##  [601] -19.019702644 -10.547499580 -23.567547111  -6.827694229   3.957191193
##  [606] -22.112238168 -12.041416608 -25.524513261  -4.819503314 -14.188403032
##  [611] -27.094532157  14.831626714  -5.019662649 -16.738682052 -18.869813956
##  [616] -27.313773509  -3.954508786 -18.712750782  -2.746583536 -10.307319801
##  [621] -11.172223743  -9.017770614 -16.768572218 -10.492463549 -15.607197599
##  [626]  13.991548652 -10.898721016 -18.216484178 -12.869617616  -8.687211260
##  [631] -20.620839504  -2.664189643  -6.773078015 -13.489797713   2.835256642
##  [636] -20.144880489 -15.100642741 -11.671697462 -13.026677856  10.264704725
##  [641]  -0.990943616  -8.645709595 -12.012889542 -18.068367410  -3.558758762
##  [646] -13.366591207 -27.317035112  -7.380793374 -19.166975981 -15.685644751
##  [651] -18.658204418  -1.745060882 -18.001322842  -0.241699132  17.000755307
##  [656] -11.353895969 -11.060311640 -23.440638051  -5.568781714  -0.388822583
##  [661] -12.414358167  -9.170451089 -13.617247578  -6.661398002  -7.343905790
##  [666]  20.129057466 -13.447301377   0.625574533 -17.296850740  -9.434522790
##  [671]  -5.321702881 -13.726452506  -7.898383123   2.896083057 -26.268395499
##  [676] -17.835365097  -4.890868965   2.176260559  -6.948907523  -7.897063667
##  [681]  -5.311340345 -29.043425723   2.384022846  -6.090011085 -10.311989167
##  [686] -26.188005218  -5.487337219 -16.908433636   4.054456219 -27.013426878
##  [691]  -8.077544027 -17.029567615 -18.085558633 -16.381987415   7.373454280
##  [696] -32.604782631 -26.124720939  -3.462598012  -0.971192714  -2.453915122
##  [701] -12.268107688 -16.959686276  -4.933526427  -3.837657064 -26.668792745
##  [706] -13.362542257  -4.928201433 -26.973907015 -12.069272239 -13.985970282
##  [711] -21.886198275  -5.474345959  -7.924102961 -22.101223761  -2.325849457
##  [716] -15.990276913 -25.609727728 -19.956640429   0.932510084  -0.828571140
##  [721] -17.730493551 -14.758358176 -21.307031840 -14.288354317 -18.395836499
##  [726] -16.009866729 -17.738907782 -18.924923512 -10.357318471 -13.041781024
##  [731] -40.121637836 -30.085230578 -10.463714094 -13.595370645 -11.950216617
##  [736] -25.144701355 -18.920330471 -18.627064914  -4.480458520 -11.882339133
```

```
##  [741] -13.251467436 -15.369384491 -13.714774127  -2.771929763   2.056918834
##  [746]   1.841531257  -3.288095646   1.755020734  -8.114735273  -5.009364032
##  [751] -29.476183114  -5.792627538   1.734762498 -24.462315570 -13.667512059
##  [756] -16.077962349  -6.801286226   0.998476722 -14.060366276  14.107464268
##  [761]   1.588998848  -6.616104084  -5.438226561 -13.140446664   4.043440202
##  [766] -14.102699491 -10.881025162  -6.751244053   1.850998002 -12.555085734
##  [771]  -1.155520791 -14.885610696 -17.273761732 -21.882552729 -15.379424159
##  [776]  -8.806487827   3.181780955   4.430805577  -7.509737884  -1.842976731
##  [781] -17.346078064  -7.418467220 -18.528607688  -7.843512414 -17.092102120
##  [786]  -2.891344768 -14.473718588 -13.382983042  -4.827665779  -9.012964057
##  [791]  -2.563143842 -12.785501415  -4.609283194 -10.883394697 -17.457575082
##  [796] -25.600784511   0.829565254 -33.410560026  -7.936947340  -2.352574288
##  [801] -31.250685810  -4.788213337 -10.464229000 -21.494717210  -3.706616923
##  [806] -17.264714760 -13.864173223 -16.717143899  -0.996138096  -1.131583094
##  [811]  -6.097218881 -19.275114902  -2.541607712  -5.051758434 -10.219314617
##  [816]  -4.119776737  -2.435089260 -14.940262726 -17.333156286 -10.010203940
##  [821]  -1.941743032   1.093093819 -13.096794822 -19.085782481  -7.369738723
##  [826] -10.209178076 -12.123425076 -20.311039198  -8.604892603  -8.337820154
##  [831] -19.846596491  -9.773659292  -2.146699673 -21.791895243   9.107907776
##  [836] -15.380014949  -1.157235710  -8.526903633 -20.084273629  -1.618110078
##  [841] -21.682391374  -5.456818671  -7.874271325 -15.530863474  -9.765699748
##  [846]  -3.518211096 -27.427947352  -4.048373391 -18.785290130  -3.555624287
##  [851] -16.290985027 -10.982001897  -3.157823008 -23.846860310   5.549455860
##  [856] -18.143413419 -18.436310859   0.249274259  -8.842966236  -7.585059601
##  [861] -23.908161417   5.260608446  -9.534837633   2.399823597  -6.914273645
##  [866]  -2.143723955   1.174787047 -10.049822723 -11.784182102  -3.037709311
##  [871]  -4.782027915 -14.478265902  -5.945993960 -17.369644247  -7.442519856
##  [876] -12.849335049 -10.311213250 -14.858588870 -11.350880842 -24.807187228
##  [881]   2.563691257  -7.909583501  -6.868432104   0.751482387 -12.866251746
##  [886] -10.319774274 -17.427333966  10.852201922  -1.451095896   0.004459961
##  [891] -21.841179101 -25.411025551 -12.117330008  -8.296474300 -16.907773744
##  [896]   6.977207390 -10.726899626 -17.176088563 -14.165144383  11.935867611
##  [901]  -4.576521742   0.236676090  -1.871738913   3.010270774  -4.320435891
##  [906] -11.200714423 -14.920027063  -7.992280246  -8.352007012  -3.063423038
##  [911]  -8.666757467 -17.394631586 -13.975188152  -7.428413606 -12.801739191
##  [916]   0.079675921   1.552196240 -12.027949491 -13.214095471 -26.210539171
##  [921]  -4.318947410  -3.287197528   4.602595218 -26.377193743   2.985010822
##  [926] -11.536998288   5.791488456  10.552351855   2.844866509  -5.825966827
##  [931]   1.598536073  -5.084097443   1.020087177  -4.314295697 -13.639170851
##  [936]  -8.630436292  -2.757245729   5.399816059  -0.130076653 -19.460219980
##  [941] -16.126806842   2.868865903 -15.566501599 -10.229777222   3.247411227
##  [946]  -7.361023310  -1.586609809 -12.641374890  -1.132307081  -7.745142443
##  [951]  -4.551672753   1.762507268 -13.135752419  -4.946233115   5.397012986
##  [956]   4.910027107  -7.563105153 -14.153143264 -30.351727622 -16.433578978
##  [961]  -9.461785190 -13.895618839   8.778255534 -24.576067267  -2.761446216
##  [966] -22.180762615 -13.057588699  -9.756022834  -6.477338988  -1.762102445
##  [971]  -4.022134389   2.956374644 -15.780661792  -8.270250195 -15.811962460
##  [976] -17.825905963 -26.668292043 -17.134732483 -15.066758278 -16.951839441
##  [981]  -4.583921888 -15.810772964  -5.691679490  -3.282988104 -14.335073055
##  [986] -17.809834289  -5.837018176 -18.216205996  -7.889241096  -2.451768303
##  [991]   7.801097527  -3.340523181 -10.107338195 -22.010546064 -16.433977845
##  [996]  -2.027076895  -4.717517256  -7.163302612 -10.121393049 -11.919137775
```

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

```
avg <-mean(v)
standError <- sd(v)/n
avg
```

```
## [1] -9.886253
```

- 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?

```
fifth_percentile <- quantile(v, probs= 0.05)
qnorm(0.05, mean= -10, sd= sqrt(100))
```

```
## [1] -26.44854
```

- 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?

```
pnorm(0, mean= -10, sd=sqrt(100))
```

```
## [1] 0.8413447
```