finalalex

```
knitr::opts_chunk$set(echo = TRUE)
library(ISLR)
library(MASS)
```

Question 1

Loading data

```
train = read.table("spam-train.txt",header=FALSE, sep=",")
head(train)
```

```
##      V1 V2   V3   V4   V5   V6 V7   V8   V9  V10 V11  V12  V13  V14 V15   V16 V17
## 1 0.00  0 0.00 0.00 0.00 0.00  0 0.00 0.00 0.00   0 0.00 0.00 0.00   0 0.00 0.0
## 2 0.00  0 0.59 0.11 0.00 0.00  0 0.00 0.11 0.23   0 0.11 0.00 0.00   0 0.11 0.0
## 3 0.06  0 0.40 0.00 0.13 0.13  0 0.13 0.00 0.00   0 1.40 0.20 0.06   0 0.00 0.2
## 4 0.00  0 0.00 0.00 0.00 0.00  0 0.00 0.00 0.00   0 0.00 0.00 0.00   0 0.00 0.0
## 5 0.00  0 0.00 0.00 0.00 0.44  0 0.00 0.00 0.00   0 0.44 0.44 0.00   0 0.00 0.0
## 6 0.00  0 0.53 0.00 0.00 0.53  0 0.00 0.00 0.53   0 0.00 0.53 0.00   0 0.00 0.0
##   V18  V19 V20  V21 V22 V23 V24  V25  V26  V27  V28 V29 V30 V31 V32  V33  V34
## 1   0 2.35   0 0.00   0   0   0 1.17 0.00 1.17 2.35   0   0   0   0 1.17 0.00
## 2   0 0.95   0 0.47   0   0   0 0.23 0.00 0.71 0.00   0   0   0   0 0.00 0.11
## 3   0 0.06   0 0.00   0   0   0 2.54 0.00 0.00 0.00   0   0   0   0 0.00 0.00
## 4   0 0.00   0 0.00   0   0   0 2.56 2.56 2.56 0.00   0   0   0   0 0.00 0.00
## 5   0 1.32   0 0.00   0   0   0 0.00 0.00 0.88 0.00   0   0   0   0 0.00 0.00
## 6   0 2.15   0 0.53   0   0   0 0.00 0.00 0.00 0.00   0   0   0   0 0.00 0.00
##    V35  V36  V37 V38 V39 V40 V41 V42 V43 V44  V45  V46 V47 V48   V49   V50
## 1 1.17 0.00 0.00   0   0   0   0   0   0   0 0.00 0.00   0   0 0.000 0.610
## 2 0.00 0.47 0.00   0   0   0   0   0   0   0 0.00 0.00   0   0 0.227 0.322
## 3 0.00 0.06 0.06   0   0   0   0   0   0   0 0.06 0.00   0   0 0.028 0.085
## 4 0.00 0.00 0.00   0   0   0   0   0   0   0 2.56 0.00   0   0 0.000 0.000
## 5 0.00 0.00 0.00   0   0   0   0   0   0   0 0.44 0.44   0   0 0.000 0.150
## 6 0.00 0.00 0.00   0   0   0   0   0   0   0 1.07 0.00   0   0 0.000 0.101
##     V51   V52   V53 V54   V55 V56 V57 V58
## 1 0.000 0.203 0.000   0 2.541  15  61   0
## 2 0.113 0.056 0.075   0 2.546  38 601   0
## 3 0.000 0.000 0.000   0 2.341  22 665   0
## 4 0.000 0.000 0.000   0 1.500   4  24   0
## 5 0.000 0.000 0.000   0 1.613  11  71   0
## 6 0.000 0.000 0.000   0 1.857  16  52   0
```

```
test = read.table("spam-test.txt",header=FALSE, sep=",")
head(test)
```

```
##      V1    V2   V3 V4    V5    V6    V7    V8    V9   V10   V11   V12  V13 V14   V15   V16
```

```
## 1 0.12 0.12 0.24   0 1.34 0.12 0.00 0.12 0.00 0.00 0.36 0.85 0.00 0.0 0.00 0.24
## 2 0.00 0.00 0.32   0 0.64 0.64 0.64 0.32 0.32 0.00 0.00 0.32 0.32 0.0 0.00 0.32
## 3 0.00 0.00 0.00   0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 0.00 0.00
## 4 0.00 0.00 0.40   0 0.40 0.20 0.00 0.00 0.00 1.01 0.20 0.40 0.00 0.0 0.00 0.20
## 5 0.51 0.43 0.29   0 0.14 0.03 0.00 0.18 0.54 0.62 0.29 0.65 0.65 1.2 0.03 0.21
## 6 0.00 0.00 0.00   0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.23 0.00 0.0 0.00 0.00
##     V17  V18  V19 V20  V21 V22  V23  V24  V25  V26 V27 V28 V29 V30 V31 V32 V33
## 1 0.24 0.00 2.33   0 0.73   0 0.00 0.00 0.00 0.00   0   0   0   0   0   0   0
## 2 0.32 0.32 2.25   0 3.21   0 0.00 0.32 0.00 0.00   0   0   0   0   0   0   0
## 3 0.00 0.00 0.00   0 0.00   0 0.00 0.00 2.12 6.38   0   0   0   0   0   0   0
## 4 0.40 0.20 0.80   0 0.40   0 0.20 0.00 0.00 0.00   0   0   0   0   0   0   0
## 5 0.43 0.03 3.03   0 1.35   0 0.51 0.54 0.00 0.00   0   0   0   0   0   0   0
## 6 0.00 0.00 1.85   0 0.61   0 0.00 0.61 0.00 0.00   0   0   0   0   0   0   0
##   V34 V35  V36  V37 V38 V39  V40 V41  V42 V43 V44  V45  V46 V47 V48   V49   V50
## 1   0   0 0.98 0.00   0   0 0.12   0 0.00   0   0 0.12 0.00   0   0 0.061 0.020
## 2   0   0 0.00 0.00   0   0 0.00   0 0.00   0   0 0.64 0.00   0   0 0.000 0.156
## 3   0   0 0.00 2.12   0   0 0.00   0 0.00   0   0 0.00 0.00   0   0 0.000 0.000
## 4   0   0 0.00 0.00   0   0 0.20   0 0.00   0   0 0.00 0.00   0   0 0.000 0.030
## 5   0   0 0.00 0.00   0   0 0.00   0 0.00   0   0 0.03 0.00   0   0 0.012 0.078
## 6   0   0 0.00 0.61   0   0 0.00   0 1.23   0   0 1.23 1.85   0   0 0.000 0.098
##   V51   V52   V53   V54   V55 V56  V57 V58
## 1   0 0.041 0.041 0.000 2.351  69  254   1
## 2   0 0.000 0.156 0.000 1.752  19  149   1
## 3   0 0.000 0.000 0.000 1.666   6   30   0
## 4   0 0.000 0.302 0.000 1.727  11  190   1
## 5   0 0.443 0.510 0.133 6.590 739 2333   1
## 6   0 0.098 0.000 0.000 1.627  15   70   0
```

Standardizing

Standardizing Train Data

```
train_Standardized = data.frame(scale(train))
train_Standardized$V58 = train$V58
train_Standardized
```

```
##                  V1           V2           V3          V4           V5
## 1     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 2     -0.349649591 -0.167356312  0.603623696  0.02351508 -0.483468390
## 3     -0.160223037 -0.167356312  0.225560888 -0.04580151 -0.282020280
## 4     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 5     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 6     -0.349649591 -0.167356312  0.484235441 -0.04580151 -0.483468390
## 7     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 8     -0.349649591 -0.167356312  0.742909994 -0.04580151 -0.483468390
## 9     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 10    -0.033938667 -0.167356312  0.822502164 -0.04580151 -0.173548221
## 11    -0.349649591  1.012314514  2.434243609 -0.04580151  0.678732243
## 12    -0.349649591 -0.167356312 -0.570360813 -0.04580151  2.042380986
## 13    -0.191794129 -0.167356312 -0.351482345 -0.04580151 -0.235532255
## 14     0.723767551  0.895128671 -0.570360813 -0.04580151 -0.483468390
## 15    -0.349649591 -0.167356312  1.379647355  0.26297240 -0.483468390
```

2

```
## 16     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 17     -0.349649591 -0.167356312 -0.570360813 -0.04580151  3.328549687
## 18     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 19     -0.349649591  0.043578207 -0.570360813 -0.04580151 -0.483468390
## 20     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 21     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 22     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 23      2.902172926 -0.167356312 -0.570360813 -0.04580151  1.112620480
## 24     -0.349649591 -0.167356312 -0.172399962 -0.04580151 -0.173548221
## 25      2.712746372 -0.167356312 -0.570360813 -0.04580151  0.260340015
## 26     -0.128651944 -0.167356312 -0.431074515 -0.04580151 -0.483468390
## 27     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 28     -0.349649591 -0.167356312 -0.570360813 -0.04580151  0.306828041
## 29     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 30     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 31      4.354443177 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 32     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 33      0.060774610 -0.167356312 -0.311686260 -0.04580151 -0.065076162
## 34     -0.349649591 -0.167356312  2.036282758 -0.04580151 -0.483468390
## 35     -0.349649591  0.098264934  0.782706079 -0.04580151 -0.483468390
## 36     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 37     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 38     -0.349649591  7.270038565 -0.570360813 -0.04580151 -0.483468390
## 39      1.955040154 -0.167356312  0.145968718 -0.04580151  0.074387914
## 40      0.187058980 -0.167356312 -0.411176473 -0.04580151  0.182859973
## 41     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 42     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 43     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 44     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 45     -0.349649591  0.059202986  0.862298249 -0.04580151 -0.034084145
## 46     -0.349649591  0.363886180 -0.570360813 -0.04580151 -0.483468390
## 47     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 48     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 49     -0.349649591 -0.167356312  0.862298249 -0.04580151  4.025870067
## 50     13.352204511 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 51      0.755338643 -0.167356312  0.126070676 -0.04580151 -0.483468390
## 52     -0.349649591 -0.167356312  1.021482589 -0.04580151 -0.483468390
## 53     -0.349649591  0.051390597  1.101074760 -0.04580151 -0.049580154
## 54     -0.349649591 -0.167356312 -0.570360813 -0.04580151  0.539268167
## 55     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 56      3.565165867  0.152951661  1.896996461 -0.04580151 -0.483468390
## 57     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 58     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 59      1.007907382 -0.167356312  2.036282758 -0.04580151 -0.483468390
## 60     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 61     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 62     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 63     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 64     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 65     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 66     -0.349649591 -0.167356312  0.106172633 -0.04580151  0.043395897
## 67     -0.349649591 -0.167356312 -0.570360813 -0.04580151  0.430796108
## 68     -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 69     -0.349649591 -0.167356312  1.459239525 -0.04580151  0.306828041
```

```
## 70    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 71    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 72    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 73    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 74    -0.349649591 -0.167356312 -0.570360813 -0.04580151  1.128116488
## 75    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 76     0.218630072 -0.167356312 -0.212196047 -0.04580151  1.949404936
## 77    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 78    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 79    -0.349649591 -0.167356312  0.902094334 -0.04580151  0.663236235
## 80    -0.349649591 -0.167356312  0.921992377 -0.04580151  0.678732243
## 81     0.597483181 -0.167356312  0.026580463 -0.04580151 -0.483468390
## 82    -0.349649591 -0.167356312  2.135772971 -0.04580151  0.570260184
## 83    -0.349649591 -0.167356312  2.036282758 -0.04580151 -0.483468390
## 84    -0.349649591 -0.050170468 -0.570360813 -0.04580151 -0.251028263
## 85    -0.349649591  0.434197686  0.961788462 -0.04580151  0.709724260
## 86    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 87    -0.349649591  7.270038565 -0.570360813 -0.04580151 -0.483468390
## 88     0.881623013 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 89    -0.128651944 -0.167356312 -0.271890175 -0.04580151 -0.374996331
## 90    -0.349649591  0.309199453 -0.570360813 -0.04580151  1.407044640
## 91    -0.349649591  0.895128671  1.220463015 -0.04580151 -0.483468390
## 92    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 93    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 94    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 95    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 96     1.418331583 -0.167356312  0.066376548 -0.04580151  1.267580564
## 97    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 98    -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 99     0.092345703 -0.167356312  0.006682421 -0.04580151  1.329564598
## 100   -0.349649591 -0.167356312  2.294957311 -0.04580151 -0.483468390
## 101   -0.349649591 -0.018920910  0.205662846 -0.04580151 -0.483468390
## 102    2.839030742  0.090452544  0.424541314  8.54315418 -0.483468390
## 103   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 104   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 105   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 106   -0.349649591 -0.167356312  0.842400207 -0.04580151 -0.127060196
## 107   -0.033938667 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 108   -0.349649591  0.051390597 -0.570360813 -0.04580151 -0.483468390
## 109    2.112895616 -0.167356312  0.981686504 -0.04580151  1.949404936
## 110   -0.349649591  0.262325115  0.524031526 -0.04580151  1.236588547
## 111    0.755338643  0.106077324 -0.570360813 -0.04580151 -0.483468390
## 112   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 113   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 114   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 115    0.976336290 -0.167356312  0.265356973 -0.04580151  2.166349054
## 116   -0.349649591  0.457634855 -0.570360813 -0.04580151  0.446292117
## 117   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 118    0.597483181 -0.167356312 -0.570360813 -0.04580151  0.461788125
## 119   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 120   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 121   -0.349649591 -0.167356312  2.434243609 -0.04580151 -0.483468390
## 122   -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
## 123   -0.349649591  1.707617187 -0.570360813 -0.04580151  0.756212286
```

```
## 124  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 125  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 126  -0.349649591  -0.167356312  -0.013215622  -0.04580151  -0.049580154
## 127  -0.349649591  -0.167356312   0.842400207  -0.04580151  -0.220036246
## 128  -0.349649591  10.988736004  -0.570360813  -0.04580151  -0.483468390
## 129  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 130  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 131  -0.349649591  -0.167356312   0.941890419  -0.04580151   0.694228252
## 132  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 133  -0.349649591  -0.167356312  -0.570360813  -0.04580151   5.466998852
## 134  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 135  -0.349649591  -0.167356312   1.319953227  -0.04580151  -0.003092128
## 136  -0.065509759   0.215450778   0.603623696  -0.04580151   0.120875939
## 137  -0.349649591   0.067015376   0.026580463  -0.04580151   0.461788125
## 138  -0.349649591  -0.167356312   2.036282758  -0.04580151  -0.483468390
## 139  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 140  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 141   1.323618306  -0.167356312   1.558729738  -0.04580151   0.337820058
## 142  -0.349649591  -0.167356312  -0.570360813  -0.04580151   0.554764176
## 143  -0.349649591  -0.167356312  -0.570360813  -0.04580151  -0.483468390
## 144  -0.349649591   0.535758750  -0.570360813  -0.04580151  -0.483468390
## 145   0.092345703  -0.167356312  -0.013215622  -0.04580151  -0.344004314
## 146  -0.349649591  -0.167356312  -0.570360813  -0.04580151   0.012403880
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## 402  -0.254936314  -0.159543922  -0.271890175  -0.04580151  -0.344004314
## 403   1.986611247  -0.167356312  -0.570360813  -0.04580151  -0.483468390
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## 405  -0.349649591   0.262325115   0.524031526  -0.04580151   1.221092539
## 406  -0.097080852  -0.034545689   0.106172633  -0.04580151   1.778948843
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## 412   0.723767551  -0.167356312   2.812306417  -0.04580151   1.097124471
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## 499  -0.349649591 10.988736004 -0.570360813 -0.04580151 -0.483468390
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## 501  -0.349649591 -0.167356312 -0.570360813 -0.04580151 -0.483468390
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## 1645 -0.097080852 -0.034545689 -0.232094090 -0.04580151  0.756212286
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##              V6          V7          V8          V9         V10         V11
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## 3     0.07419145 -0.28188159  0.06915900 -0.320389910 -0.3861860246 -0.29459327
## 4    -0.34068756 -0.28188159 -0.27887059 -0.320389910 -0.3861860246 -0.29459327
## 5     1.06351834 -0.28188159 -0.27887059 -0.320389910 -0.3861860246 -0.29459327
## 6     1.35074227 -0.28188159 -0.27887059 -0.320389910  0.4331374305 -0.29459327
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## 9    -0.34068756 -0.28188159 -0.27887059 -0.320389910 -0.3861860246 -0.29459327
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## 15   -0.34068756  0.82339697 -0.27887059 -0.320389910  1.1287894207 -0.29459327
## 16   -0.34068756 -0.28188159 -0.27887059 -0.320389910 -0.3861860246 -0.29459327
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## 18   -0.34068756 -0.28188159 -0.27887059 -0.320389910 -0.3861860246 -0.29459327
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## 2     -4.895427e-01 -0.31073882 -0.159375873 -0.19835608 -0.159424622
## 3      1.013936e+00  0.33606695  0.026682289 -0.19835608 -0.277735009
## 4     -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 5     -1.049319e-01  1.11223387 -0.159375873 -0.19835608 -0.277735009
## 6     -6.177463e-01  1.40329647 -0.159375873 -0.19835608 -0.277735009
## 7     -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 8     -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 9     -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 10     8.973872e-01  3.24669291 -0.159375873 -0.19835608  0.044929682
## 11     2.027910e+00 -0.31073882 -0.159375873  5.32419235 -0.277735009
## 12     3.262984e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 13    -4.312683e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 14    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 15     5.244313e-01 -0.31073882 -0.159375873 -0.19835608  2.884378955
## 16    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 17    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 18     3.263326e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 19    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 20    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 21    -6.177463e-01  3.21435262 -0.159375873 -0.19835608 -0.277735009
```

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## 22    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 23    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 24     5.477410e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 25    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.238528496
## 26     5.943605e-01  0.14202522  0.057691983 -0.19835608 -0.277735009
## 27    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 28     2.983609e+00 -0.31073882  3.034622583 -0.19835608 -0.277735009
## 29    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 30    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 31     1.118830e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 32    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 33    -1.398965e-01  0.56244897 -0.159375873 -0.19835608 -0.277735009
## 34    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 35    -6.177463e-01 -0.31073882 -0.159375873  1.04513165  0.453638289
## 36     3.029887e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 37     1.281656e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 38    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 39    -1.981708e-01 -0.31073882 -0.159375873 -0.19835608  0.109462620
## 40     8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
## 41     6.666549e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 42    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 43    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 44    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 45    -6.177463e-01  0.14202522 -0.159375873  0.31366828 -0.127158153
## 46    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 47     4.195374e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 48    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 49    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.281810994
## 50     4.440469e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 51    -2.098257e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 52     3.146436e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 53    -6.177463e-01  0.14202522 -0.159375873  0.31366828 -0.127158153
## 54     1.514753e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 55    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 56    -1.398965e-01 -0.31073882 -0.159375873 -0.19835608  0.163240068
## 57     5.512717e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 58    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 59    -6.177463e-01  2.50286627 -0.159375873 -0.19835608 -0.277735009
## 60    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 61    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 62     6.293251e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 63    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 64    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 65    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 66    -2.214806e-01  0.78883099 -0.159375873 -0.19835608 -0.277735009
## 67     6.989124e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 68    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 69    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.270794965
## 70     8.391128e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 71    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 72    -1.049319e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 73    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 74    -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  6.444446037
## 75     2.703892e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
```

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## 76    1.161687e-02   0.65946983   0.026682289 -0.19835608 -0.277735009
## 77   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 78   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 79   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 80   -3.263744e-01   4.57264473  -0.159375873  2.54463155 -0.277735009
## 81   -2.681001e-01   1.62967849  -0.159375873 -0.19835608 -0.277735009
## 82   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 83    9.090421e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 84   -8.162211e-02  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 85    7.342190e-01  -0.31073882  -0.159375873  4.04413146 -0.277735009
## 86   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 87   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 88   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 89   -8.162211e-02  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 90   -6.177463e-01  -0.31073882  -0.159375873  2.03260720 -0.277735009
## 91   -9.327698e-02  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 92   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 93   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 94    2.214046e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 95   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 96    2.214046e-01   1.50031733  -0.159375873 -0.19835608 -0.019603256
## 97   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 98   -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 99   -4.545780e-01  -0.31073882  -0.159375873  0.31366828  0.034174192
## 100   2.750512e+00  -0.31073882  -0.159375873 -0.19835608  1.271055504
## 101  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 102   1.631302e-01  -0.31073882   0.336779227 -0.19835608  0.260039475
## 103  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608  1.098967670
## 104   1.065252e+01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 105  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 106   1.596680e+00  -0.31073882  -0.159375873 -0.19835608 -0.030358746
## 107   1.316963e+00   0.01266406   0.801924633 -0.19835608 -0.277735009
## 108   4.658149e-02  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 109  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608  1.410876870
## 110   2.327174e-02  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 111  -2.098257e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 112  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 113  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608  2.981178362
## 114  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 115   3.729179e-01   0.36840724  -0.159375873 -0.19835608 -0.277735009
## 116  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608  1.658253133
## 117  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 118  -2.681001e-01   4.63732531  -0.159375873 -0.19835608 -0.277735009
## 119  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 120  -6.177463e-01  17.63812125  -0.159375873 -0.19835608 -0.277735009
## 121  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 122  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 123  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 124  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 125  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 126   1.666609e+00  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 127  -2.098257e-01  -0.31073882  -0.159375873 -0.19835608  0.098707130
## 128  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
## 129  -6.177463e-01  -0.31073882  -0.159375873 -0.19835608 -0.277735009
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## 130  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 131  -3.263744e-01  4.60498502 -0.159375873  2.58120472 -0.277735009
## 132   1.161687e-02  1.43563676 -0.159375873 -0.19835608 -0.277735009
## 133  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 134  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 135  -2.564452e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 136   1.212069e+00  0.30372666 -0.159375873 -0.19835608 -0.277735009
## 137  -2.681001e-01 -0.31073882 -0.159375873 -0.19835608  0.711770041
## 138   2.447485e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 139  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 140  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 141  -3.800089e-05 -0.31073882 -0.159375873 -0.19835608  0.292305944
## 142   1.724883e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 143  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 144  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.690259062
## 145  -1.169287e-02 -0.18137767  0.119711371 -0.19835608 -0.277735009
## 146  -2.447903e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 147   5.593959e-01  0.27138637 -0.159375873 -0.19835608 -0.277735009
## 148  -3.963037e-01 -0.31073882  0.119711371 -0.19835608 -0.277735009
## 149   8.158031e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 150   3.262984e-01 -0.31073882  0.956973102 -0.19835608 -0.277735009
## 151   1.747851e-01  1.37095618  0.956973102  0.82569264  0.496660248
## 152  -1.632062e-01 -0.31073882 -0.159375873 -0.19835608  0.561193186
## 153   2.272662e+00  1.27393531 -0.159375873 -0.19835608  5.067743359
## 154  -4.196134e-01 -0.05201651 -0.159375873 -0.19835608 -0.191691091
## 155  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 156   6.176703e-01 -0.31073882 -0.159375873 -0.19835608  0.475149269
## 157   1.503441e+00 -0.31073882 -0.159375873 -0.19835608  0.044929682
## 158   2.249352e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 159   6.526349e-01  0.56244897 -0.159375873 -0.19835608 -0.277735009
## 160  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 161   3.845728e-01 -0.31073882 -0.159375873 -0.19835608 -0.191691091
## 162  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.884378955
## 163  -1.748611e-01  0.91819214 -0.159375873  4.00755829 -0.073380705
## 164  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 165  -4.665749e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 166   7.458739e-01 -0.05201651  0.615866471 -0.19835608 -0.277735009
## 167   1.456821e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 168  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 169  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 170   5.127764e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 171  -6.177463e-01 -0.31073882  0.925963408 -0.19835608 -0.277735009
## 172  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.130973599
## 173  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.152484578
## 174  -4.662329e-01 -0.31073882 -0.159375873 -0.19835608  0.001907723
## 175   4.545020e-01  1.17691445 -0.159375873 -0.19835608 -0.277735009
## 176   1.678264e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 177  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 178  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 179  -6.177463e-01  2.08244252 -0.159375873 -0.19835608 -0.277735009
## 180   5.244313e-01 -0.31073882  0.429808308 -0.19835608  0.776302979
## 181  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 182   3.228362e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 183   5.244313e-01 -0.31073882  0.429808308 -0.19835608  0.776302979
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## 184  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 185  -6.177463e-01  0.17436551 -0.159375873  0.35024145 -0.116402663
## 186  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.217538596
## 187  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 188  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 189  -2.214806e-01  0.40074753  0.181730758  7.70144829 -0.277735009
## 190  -6.177463e-01  6.86880521 -0.159375873 -0.19835608 -0.277735009
## 191  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 192  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.862346897
## 193  -3.800089e-05 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 194  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 195  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 196  -6.177463e-01 -0.31073882 -0.159375873  1.74002185 -0.277735009
## 197  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 198  -3.263744e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 199  -1.865160e-01 -0.31073882 -0.159375873 -0.19835608  0.120218109
## 200  -4.545780e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 201   5.710508e-01  2.98797060 -0.159375873 -0.19835608  0.819324938
## 202  -6.177463e-01  0.69181012 -0.159375873 -0.19835608  0.399860841
## 203   1.829777e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 204  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 205  -1.169287e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 206   1.980948e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 207  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 208  -1.169287e-02  0.62712954 -0.004327404 -0.19835608 -0.277735009
## 209   1.923016e+00 -0.31073882  3.220680745 -0.19835608 -0.277735009
## 210  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.227773006
## 211  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 212  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 213  -6.177463e-01  4.15222098 -0.159375873 -0.19835608 -0.277735009
## 214   8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
## 215  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 216  -6.177463e-01  4.24924185 -0.159375873 -0.19835608 -0.277735009
## 217  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 218  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 219  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 220  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.087951640
## 221   1.235379e+00 -0.31073882 -0.159375873 -0.19835608  1.432387849
## 222  -6.177463e-01  0.78883099 -0.159375873 -0.19835608 -0.277735009
## 223   1.281656e-01 -0.31073882 -0.159375873 -0.19835608  0.066440661
## 224  -2.447903e-01  0.72415041 -0.159375873 -0.19835608  0.066440661
## 225  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 226  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 227  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 228   1.165107e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 229  -2.447903e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 230   5.360861e-01  0.04500435  0.181730758 -0.19835608 -0.277735009
## 231  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 232   2.563692e-01  0.17436551 -0.159375873 -0.19835608 -0.277735009
## 233   5.127764e-01  1.53265762  3.747845539 -0.19835608  0.001907723
## 234  -5.011975e-01 -0.31073882  0.150721064 -0.19835608 -0.277735009
## 235  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 236  -3.147196e-01 -0.31073882 -0.159375873 -0.19835608  0.001907723
## 237  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 238   5.827056e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 239   1.270343e+00 -0.31073882  0.832934327 -0.19835608 -0.277735009
## 240  -6.177463e-01  2.21180368 -0.159375873 -0.19835608 -0.277735009
## 241  -4.312683e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 242   1.398205e-01  1.79137993  3.561787376 -0.08863657 -0.051869725
## 243   3.543043e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 244  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 245  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 246  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 247   1.258688e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 248  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.582704165
## 249  -1.632062e-01 -0.31073882 -0.159375873 -0.19835608  0.561193186
## 250   4.533708e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 251  -2.681001e-01  4.63732531 -0.159375873 -0.19835608 -0.277735009
## 252  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 253  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 254  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 255  -6.177463e-01  0.72415041 -0.159375873 -0.19835608 -0.277735009
## 256  -6.177463e-01  0.33606695 -0.159375873 -0.19835608  0.614970634
## 257   8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
## 258  -1.748611e-01  0.07734464 -0.159375873  3.97098512 -0.277735009
## 259  -6.177463e-01  0.04500435  0.553847083 -0.19835608 -0.277735009
## 260   1.048559e-01 -0.31073882 -0.159375873  5.87278988 -0.277735009
## 261  -2.914098e-01 -0.31073882 -0.159375873 -0.19835608  1.744297050
## 262  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 263  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 265  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 266  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 267  -8.162211e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 268  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.045190221
## 269  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 271   1.161687e-02 -0.31073882  1.515147589 -0.19835608 -0.277735009
## 272  -3.030647e-01 -0.31073882  4.057942476 -0.19835608 -0.277735009
## 273   2.097497e-01 -0.31073882 -0.159375873 -0.19835608  1.260300015
## 274  -6.177463e-01  2.01776195 -0.159375873 -0.19835608 -0.277735009
## 275   5.823636e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 276  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 277  -2.334775e-02 -0.31073882 -0.159375873 -0.19835608 -0.008847767
## 278  -6.177463e-01  0.49776839 -0.159375873 -0.19835608 -0.008847767
## 279   2.327174e-02  1.72669935 -0.159375873 -0.19835608  0.227773006
## 280  -6.177463e-01 -0.31073882 13.298831212 -0.19835608 -0.277735009
## 281  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 282  -1.165867e-01 -0.31073882 -0.159375873 -0.19835608  0.647237103
## 283  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 284  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 285  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 286   3.612631e-01 -0.31073882 -0.159375873 -0.19835608 10.649842499
## 287  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 288  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.238528496
## 289  -3.496842e-01 -0.31073882  5.019242982 -0.19835608 -0.277735009
## 290  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 291  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 292  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 293   2.330595e-01 -0.31073882  0.956973102 -0.19835608 -0.277735009
## 294  -6.177463e-01 -0.31073882 -0.159375873  1.41086333 -0.277735009
## 295  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 296  -6.177463e-01  5.76923540 -0.159375873 -0.19835608 -0.277735009
## 297  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 298  -3.729939e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 299  -5.944365e-01 -0.31073882 -0.159375873 -0.19835608 -0.223957560
## 300   1.130485e+00  0.27138637 -0.159375873 -0.19835608  0.926879835
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## 303   5.593959e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 304  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 305  -4.429232e-01  0.17436551 -0.159375873 -0.19835608 -0.277735009
## 306  -3.147196e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 307  -2.331355e-01 -0.31073882 -0.159375873 -0.19835608  0.313816923
## 308  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 309  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 310  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 311  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.485904758
## 312   2.214046e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 313  -1.632062e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 314  -6.177463e-01  6.86880521 -0.159375873 -0.19835608 -0.277735009
## 315   8.154611e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 316  -2.214806e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 317   4.658149e-02  2.59988714 -0.159375873  0.38681462 -0.277735009
## 318  -6.177463e-01  7.77433329 -0.159375873 -0.19835608 -0.277735009
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## 320  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 321   9.906262e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 322   5.127764e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 325   3.845728e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 326  -6.996724e-02 -0.31073882 -0.159375873 -0.19835608  0.227773006
## 327  -2.098257e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 328  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 329  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 330   1.806467e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 331   9.556616e-01  3.11733175 -0.159375873 -0.19835608  0.034174192
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## 333  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.077456690
## 334   1.526750e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 336   1.911361e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 338  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 339  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 340  -2.447903e-01  0.72415041 -0.159375873 -0.19835608  0.066440661
## 341  -3.147196e-01  0.53010868 -0.159375873  0.27709511  0.001907723
## 342  -3.263744e-01  3.02031089 -0.159375873 -0.19835608  0.550437696
## 343   5.943605e-01 -0.31073882 -0.159375873 -0.19835608  1.959406843
## 344  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 345   3.146436e-01 -0.31073882 -0.159375873  5.28761918 -0.277735009
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## 346 -2.331355e-01  0.75649070 -0.159375873 -0.19835608 -0.277735009
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## 348 -1.981708e-01 -0.31073882 -0.159375873 -0.19835608  0.905368855
## 349 -3.263744e-01  4.60498502 -0.159375873  2.58120472 -0.277735009
## 350 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 351  4.778118e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 352 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 353  2.330595e-01  1.79137993  3.778855232 -0.08863657 -0.030358746
## 354 -4.665749e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 355 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 356  1.258688e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 357  3.612631e-01 -0.31073882 -0.159375873  1.00855848  1.357099422
## 358 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 361  6.293251e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 362 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 363 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 364 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 365  2.447143e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 366 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 367 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 368  1.247033e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 369 -2.214806e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 370 -4.778878e-01  0.07734464 -0.159375873  0.24052195 -0.277735009
## 371 -4.079585e-01  0.59478926 -0.159375873 -0.19835608 -0.277735009
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## 374  4.311923e-01 -0.31073882 -0.159375873 -0.19835608 -0.148669132
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## 378 -6.177463e-01 -0.31073882  4.026932782 -0.19835608 -0.277735009
## 379  1.794812e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 386 -3.500262e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 392 -2.098257e-01  1.37095618  0.367788921 -0.19835608 -0.191691091
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## 395  9.906262e-01 -0.31073882 -0.159375873 -0.19835608  2.701535631
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## 399  2.680241e-01 -0.01967622 -0.159375873 -0.19835608 -0.277735009
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## 400  -5.478170e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 404  -2.564452e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 411   8.740775e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 412  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 413  -2.681001e-01  1.62967849 -0.159375873 -0.19835608 -0.277735009
## 414  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 415  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 416  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 423  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.389105351
## 424  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 426   8.973872e-01  0.23904608 -0.159375873  1.99603403  0.464393779
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## 428   8.158031e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 429  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 430   1.747851e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 431  -3.147196e-01  1.40329647 -0.159375873 -0.19835608 -0.277735009
## 432  -1.632062e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 433  -1.632062e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 434   3.263326e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 435  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 437  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 438  -2.214806e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 439  -1.865160e-01 -0.31073882 -0.159375873 -0.19835608  0.916124345
## 440   1.398205e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 441  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.604475684
## 442  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 443  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 444  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.335848982
## 445  -6.177463e-01  0.72415041 -0.159375873 -0.19835608 -0.277735009
## 446  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 447  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 448   6.526349e-01 -0.31073882 -0.159375873 -0.19835608  0.496660248
## 449  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.410616331
## 450  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 451   2.214046e-01 -0.31073882 -0.159375873 -0.19835608 -0.170180112
## 452   3.262984e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 453   8.740775e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 454    2.327174e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 455    1.864742e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 456    4.545020e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 457   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 458   -2.914098e-01  0.59478926 -0.159375873 -0.19835608  0.625726124
## 459   -6.177463e-01  0.49776839 -0.159375873 -0.19835608 -0.277735009
## 460   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.174256097
## 461   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 462   -1.398965e-01 -0.21371795 -0.159375873 -0.19835608 -0.266979519
## 463    5.827056e-01 -0.31073882 -0.159375873 -0.19835608  0.270794965
## 464   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 465    1.200414e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 466    1.713228e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 467   -6.177463e-01  0.46542810 -0.159375873 -0.19835608 -0.277735009
## 468   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 469   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 470   -6.177463e-01  0.36840724 -0.159375873 -0.19835608  0.625726124
## 471    6.060154e-01 -0.31073882 -0.159375873  7.51858245 -0.277735009
## 472   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 473   -3.380293e-01 -0.31073882 -0.159375873 -0.19835608  0.249283985
## 474   -6.177463e-01  4.34626271 -0.159375873 -0.19835608  1.271055504
## 475   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 476   -9.327698e-02 -0.21371795  0.057691983 -0.19835608 -0.159424622
## 477    1.223724e+00  2.24414397 -0.159375873 -0.19835608 -0.277735009
## 478   -3.729939e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 479   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 480   -2.214806e-01  0.23904608 -0.159375873  5.14132651  0.087951640
## 481    4.195374e-01  1.11223387  3.065632276 -0.08863657  0.001907723
## 482    1.456821e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 483    9.673164e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 484   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 485    1.316963e+00  0.01266406  0.801924633 -0.19835608 -0.277735009
## 486    8.274580e-01  0.20670580 -0.159375873  2.21547304  0.604215145
## 487   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 488   -3.613391e-01  2.56754685 -0.159375873 -0.19835608  0.195506537
## 489   -3.496842e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 490   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 491   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.130973599
## 492   -4.196134e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 493   -2.564452e-01  0.69181012 -0.159375873 -0.19835608  0.055685171
## 494    2.016255e+00 -0.31073882  1.236060345 -0.19835608  0.206262027
## 495   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 497   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 498   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.087951640
## 499   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 500   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 501   -6.177463e-01 -0.31073882  2.476448095 -0.19835608 -0.277735009
## 502    5.827056e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 503    7.109092e-01 -0.31073882 -0.159375873 -0.19835608 -0.127158153
## 504   -1.632062e-01 -0.31073882 -0.159375873 -0.19835608  0.141729089
## 505   -1.515513e-01 -0.31073882 -0.159375873 -0.19835608 -0.062625215
## 506   -6.177463e-01 -0.01967622 -0.159375873 -0.19835608 -0.277735009
## 507    8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
```

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## 508 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  4.024460860
## 509 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.008847767
## 510 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 511  2.563692e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 512 -6.177463e-01  0.04500435  0.553847083 -0.19835608 -0.277735009
## 513  4.195374e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 514  3.262984e-01 -0.31073882 -0.159375873 -0.19835608  0.152484578
## 515  8.740775e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 516 -4.895427e-01 -0.31073882 -0.159375873 -0.19835608 -0.159424622
## 517  1.048559e-01 -0.31073882 -0.159375873 -0.19835608  0.055685171
## 518 -4.895427e-01  0.04500435 -0.159375873 -0.19835608 -0.277735009
## 519 -5.245073e-01 -0.31073882 -0.159375873 -0.12520974 -0.277735009
## 520 -4.312683e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 521 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 522  1.980948e-01  0.65946983 -0.159375873  5.68992403 -0.170180112
## 523 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 525 -1.398965e-01 -0.31073882 -0.159375873 -0.19835608  0.163240068
## 526 -2.447903e-01  0.72415041 -0.159375873 -0.19835608  0.066440661
## 527 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.206262027
## 528  5.477410e-01  0.33606695 -0.159375873 -0.19835608 -0.277735009
## 529 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 530  3.076848e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 531 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 532  4.673566e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 533 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 534 -3.263744e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 536 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.228033546
## 537 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.884378955
## 538 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.195506537
## 539  1.631302e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 540 -3.030647e-01  0.56244897 -0.159375873 -0.19835608  0.905368855
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## 543  1.980948e-01  0.65946983 -0.159375873  5.68992403 -0.170180112
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## 545 -1.165867e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 546 -3.380293e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 547 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 548  3.379533e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 549 -1.169287e-02 -0.18137767  0.119711371 -0.19835608 -0.277735009
## 550  3.950964e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 551  8.857323e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 552  4.545020e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 553 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 554 -1.748611e-01 -0.31073882 -0.159375873 -0.19835608  1.378610401
## 555  1.980948e-01 -0.31073882 -0.159375873  1.08170482  0.475149269
## 556  1.258688e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 557  2.447143e-01 -0.31073882 -0.159375873 -0.19835608  0.518171227
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## 560 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 561 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 562   1.316963e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 563  -1.049319e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 564   3.263326e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 565  -1.169287e-02 -0.31073882 -0.159375873 -0.19835608 -0.137913643
## 566  -5.831237e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 567  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 568  -4.778878e-01  0.49776839 -0.159375873 -0.19835608 -0.148669132
## 569  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 570  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 571  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 572   8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
## 573  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 574  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 575  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 576   5.477410e-01 -0.05201651 -0.159375873 -0.19835608 -0.277735009
## 577  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 578  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 579  -6.177463e-01  4.44328358 -0.159375873 -0.19835608  7.627549901
## 580  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.152745118
## 581  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 582  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 583  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 584   1.212069e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 585  -2.914098e-01  0.04500435 -0.159375873 -0.19835608 -0.094891684
## 586   3.379533e-01  0.56244897 -0.159375873 -0.19835608 -0.277735009
## 587  -6.177463e-01  1.62967849 -0.159375873 -0.19835608 -0.277735009
## 588   2.447485e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 589  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.475409808
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## 592  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 593   1.678264e+00  2.24414397 -0.159375873 -0.19835608 -0.277735009
## 594   2.529069e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 595  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 596   7.924934e-01 -0.31073882 -0.159375873 -0.19835608 -0.019603256
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## 598   5.127764e-01 -0.31073882 -0.159375873 -0.19835608  0.238528496
## 599   3.845728e-01 -0.31073882  1.422118508 -0.19835608 -0.277735009
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## 602  -4.665749e-02 -0.31073882 -0.159375873 -0.19835608  0.787058469
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## 605   1.980948e-01 -0.31073882 -0.159375873 -0.19835608  0.851591407
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## 607  -6.177463e-01  4.89604762 -0.159375873 -0.19835608 -0.277735009
## 608  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.571948676
## 609   1.165107e-01 -0.01967622  0.956973102 -0.19835608 -0.277735009
## 610   1.281656e-01 -0.31073882 -0.159375873 -0.19835608  0.410616331
## 611  -1.865160e-01 -0.31073882 -0.159375873 -0.19835608  0.916124345
## 612  -1.169287e-02  0.62712954 -0.004327404 -0.19835608 -0.277735009
## 613   1.631302e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 614   1.747851e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 615   8.154611e-02  0.23904608  0.367788921 -0.19835608 -0.277735009
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## 616   4.440469e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 619  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 620  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 621   1.165449e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 622   3.612631e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 623   3.146778e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 624   4.658149e-02  2.59988714 -0.159375873  0.38681462 -0.277735009
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## 627   6.235319e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 628   1.013936e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 629  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 630   1.526750e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 631  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 632  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 633  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 634  -3.729939e-01  0.36840724 -0.159375873 -0.19835608 -0.277735009
## 635  -1.748611e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 636   9.090421e-01 -0.31073882 -0.159375873 -0.19835608  1.131234139
## 637  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 638  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 639   8.041482e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 643  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 644   1.281656e-01  0.49776839 -0.159375873  0.24052195 -0.277735009
## 645  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 646  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 647   8.391128e-01 -0.31073882 -0.159375873  0.93541214  1.400121380
## 648   2.214388e+00 -0.31073882  1.329089427 -0.19835608  0.238528496
## 649   2.214388e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 650  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 651   1.037246e+00 -0.31073882 -0.159375873 -0.19835608  1.249544525
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## 653  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 654  -1.282416e-01 -0.31073882 -0.159375873  1.33771700 -0.277735009
## 655  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 656  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 657   4.428472e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 658  -3.496842e-01  0.04500435 -0.159375873 -0.19835608 -0.277735009
## 659   2.447143e-01 -0.31073882 -0.159375873  1.15485115  3.314598542
## 660  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 661   1.398205e-01  1.79137993  3.561787376 -0.08863657 -0.051869725
## 662  -6.177463e-01  0.62712954 -0.159375873 -0.19835608 -0.277735009
## 663  -6.996724e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 664   2.587344e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 665  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 666  -6.177463e-01  5.51051310 -0.159375873 -0.19835608  0.690259062
## 667  -6.177463e-01  0.14202522 -0.159375873  0.31366828 -0.127158153
## 668   8.624226e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 669  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 670  -6.177463e-01  2.21180368 -0.159375873 -0.19835608 -0.277735009
## 671  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 672   1.048559e-01  1.01521301 -0.159375873 -0.19835608 -0.170180112
## 673  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 674  -6.177463e-01  0.14202522 -0.159375873  0.31366828 -0.127158153
## 675  -6.177463e-01  3.18201233 -0.159375873 -0.19835608 -0.277735009
## 676   1.161687e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 677   2.327174e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 678  -6.177463e-01  0.23904608 -0.159375873  0.42338779 -0.094891684
## 679  -4.895427e-01  0.43308781 -0.159375873  1.52058284 -0.159424622
## 680  -4.665749e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 681  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 682  -1.169287e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 683   6.989124e-02 -0.31073882 -0.159375873 -0.19835608  0.034174192
## 684   2.447143e-01 -0.31073882 -0.159375873 -0.19835608  0.518171227
## 685  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 686   8.391128e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 687  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 688  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 689  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 690  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 691  -3.263744e-01  0.91819214 -0.159375873 -0.19835608  0.130973599
## 692  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 693  -2.331355e-01  0.75649070 -0.159375873 -0.19835608 -0.277735009
## 694   9.090421e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 695  -3.500262e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 696  -1.865160e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 697   4.195374e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 698   1.281656e-01 -0.31073882 -0.159375873 -0.19835608  0.410616331
## 699   1.083865e+00 -0.31073882 -0.159375873 -0.19835608  0.109462620
## 700  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 701   3.543043e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 702  -2.331355e-01  0.75649070 -0.159375873 -0.19835608  0.077196151
## 703   4.311923e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 704   4.078825e-01  3.95817925 -0.159375873 -0.19835608 -0.277735009
## 705  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 707  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  6.444446037
## 708  -2.334775e-02  1.33861589 -0.159375873 -0.19835608  0.270794965
## 709  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 710   4.661569e-01  2.69690800 -0.159375873 -0.19835608  0.346083393
## 711  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 712  -1.049319e-01 -0.31073882 -0.159375873 -0.19835608  0.195506537
## 713  -2.331355e-01  1.82372022 -0.159375873 -0.19835608  0.432127310
## 714  -6.177463e-01  1.62967849 -0.159375873 -0.19835608 -0.277735009
## 715  -4.545780e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 716  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 717   2.796789e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 718  -5.831237e-02 -0.31073882  1.639186364 -0.19835608  0.657992593
## 719  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 720   8.158031e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 721  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 722  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 723   2.796789e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 724    2.913338e-01 -0.31073882 -0.159375873 -0.19835608  0.561193186
## 725    2.214388e+00 -0.31073882  1.329089427 -0.19835608  0.238528496
## 726    1.153794e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 728   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.346083393
## 729   -3.147196e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 730    1.281656e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 731    2.750512e+00 -0.31073882 -0.159375873 -0.19835608  1.271055504
## 732   -2.098257e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 733    5.477410e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 734   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 735    1.002281e+00  1.56499791  3.251690439  0.31366828 -0.127158153
## 736   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 737   -6.177463e-01  4.44328358 -0.159375873 -0.19835608  7.627549901
## 738    2.563692e-01 -0.31073882 -0.159375873 -0.19835608  1.335588442
## 739    3.845728e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 740   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 741   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 742   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 743    5.823636e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 744   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 745   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 746   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 747   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 748   -6.996724e-02 -0.31073882 -0.159375873 -0.19835608  0.227773006
## 749    5.011215e-01 -0.31073882 -0.159375873 -0.19835608  1.787319009
## 750   -3.800089e-05 -0.31073882 -0.159375873 -0.19835608  0.292305944
## 751    4.195374e-01  1.43563676  3.127651664 -0.19835608 -0.105647174
## 752    1.398205e-01 -0.31073882 -0.159375873  2.17889987 -0.277735009
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## 755    9.673164e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 757   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 759    8.391128e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 760    1.351927e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 761   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 764   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 765   -2.447903e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 766   -2.331355e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 769    5.827056e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 770    3.962277e-01 -0.31073882 -0.159375873 -0.19835608  0.657992593
## 771   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 772    2.214046e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 773    1.281656e-01 -0.31073882 -0.159375873 -0.19835608  0.410616331
## 774    1.223724e+00 -0.31073882 -0.159375873 -0.19835608  0.281550454
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## 776    1.864400e-01  0.23904608  0.088701677  2.32519254  0.647237103
## 777   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 778  -3.963037e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 782   9.906262e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 783  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 784  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 785   1.853087e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 786  -3.263744e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 787  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.184751047
## 788  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 789  -8.162211e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 790   2.330595e-01 -0.31073882 -0.159375873 -0.19835608  0.109462620
## 791  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 792   2.680241e-01  0.49776839 -0.159375873 -0.19835608 -0.277735009
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## 796  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.238528496
## 797  -2.214806e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 798  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 799  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 800   1.619989e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 801  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 802  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 803  -1.398965e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 805  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.324572413
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## 807  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 808  -2.331355e-01  1.82372022  1.360099120  2.21547304 -0.277735009
## 809   1.270343e+00 -0.31073882  0.832934327 -0.19835608 -0.277735009
## 810   1.177104e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 811  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.367594372
## 812   3.262984e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 813  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 814  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 815  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 816  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 817  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  3.228554625
## 818  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 819   5.710508e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 820   1.223724e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 821  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 822   1.923016e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 823  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 824  -6.177463e-01 -0.31073882 30.850317871 -0.19835608 -0.277735009
## 825  -3.263744e-01  4.66966560 -0.159375873  2.61777789 -0.277735009
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## 827  -3.263744e-01  1.33861589 -0.159375873 -0.19835608 -0.277735009
## 828  -6.177463e-01  4.79902675 -0.159375873 -0.19835608 -0.277735009
## 829  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 830  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 831  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 832   8.154611e-02   0.23904608   0.367788921  -0.19835608  -0.277735009
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## 837  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 838   5.943605e-01   0.14202522   0.057691983  -0.19835608  -0.277735009
## 839  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 840   6.176703e-01  -0.31073882  -0.159375873  -0.19835608   0.475149269
## 841   4.428472e-01  -0.31073882  -0.159375873  -0.19835608   0.701014552
## 842  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 843  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 844  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 845   3.647937e+00  -0.01967622  -0.159375873  -0.19835608  -0.277735009
## 846  -3.380293e-01  -0.31073882  -0.159375873   0.67939997  -0.277735009
## 847   9.090421e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 848  -3.800089e-05  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 849   2.610654e+00  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 850   2.214046e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 851  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 852   1.759848e+00   0.33606695   0.150721064  -0.19835608  -0.277735009
## 853   3.950964e+00  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 854   1.072210e+00  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 855  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608   1.851851947
## 856  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608   0.130973599
## 857   1.002281e+00  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 858   1.161687e-02  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 859   4.658149e-02   1.53265762  -0.159375873  -0.19835608  -0.073380705
## 860  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 861   1.864400e-01   0.62712954  -0.159375873   5.58020453  -0.180935601
## 862   1.161687e-02  -0.31073882  -0.159375873  -0.19835608   0.303061434
## 863  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 864  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 865  -1.748611e-01   0.91819214  -0.159375873  -0.19835608   0.130973599
## 866  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608   2.884378955
## 867   2.156113e+00  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 868  -6.177463e-01  -0.31073882  -0.159375873   2.03260720  -0.277735009
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## 870   2.680241e-01  -0.31073882  -0.159375873  -0.19835608   0.260039475
## 871   3.496082e-01  -0.31073882  -0.159375873  -0.19835608   0.614970634
## 872  -4.895427e-01  -0.31073882  -0.159375873  -0.19835608  -0.159424622
## 873  -1.049319e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 874  -4.662329e-01  -0.31073882  -0.159375873  -0.19835608  -0.137913643
## 875   8.973872e-01  -0.31073882   0.088701677  -0.19835608   0.238528496
## 876  -3.147196e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 877  -5.245073e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 878  -1.282416e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 879  -6.177463e-01  -0.31073882   3.778855232  -0.19835608  -0.277735009
## 880   1.048559e-01   0.69181012  -0.159375873   3.97098512  -0.277735009
## 881   3.845728e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 882  -6.177463e-01   0.23904608  -0.159375873   0.42338779  -0.094891684
## 883  -6.177463e-01  -0.31073882  -0.159375873  -0.19835608  -0.277735009
## 884   1.161687e-02   1.43563676  -0.159375873  -0.19835608  -0.277735009
## 885   8.154611e-02   0.23904608   0.367788921  -0.19835608  -0.277735009
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## 886    4.673566e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 887    1.048901e+00 -0.31073882 -0.159375873 -0.19835608  1.260300015
## 888   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 889   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 890   -6.177463e-01  0.20670580 -0.159375873  0.38681462 -0.105647174
## 891    2.447143e-01  0.88585185 -0.159375873 -0.19835608 -0.277735009
## 892   -6.177463e-01  2.21180368 -0.159375873 -0.19835608 -0.277735009
## 893   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 894    9.906262e-01 -0.31073882 -0.159375873  8.25004582 -0.277735009
## 895    3.729179e-01  1.24159502 -0.159375873  6.89683859 -0.148669132
## 896   -2.334775e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 897   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 898    5.244313e-01 -0.31073882  0.429808308 -0.19835608  0.776302979
## 899   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 900   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 901    1.747851e-01  0.62712954 -0.159375873  5.54363136 -0.180935601
## 902    1.095520e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 903   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 904   -2.331355e-01  0.75649070 -0.159375873 -0.19835608 -0.277735009
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## 908   -3.030647e-01 -0.31073882 -0.159375873 -0.19835608  0.883857876
## 909   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.109983699
## 910    1.747851e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 911   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 917   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.109983699
## 918    2.796789e-01  1.30627560  3.933903701 -0.08863657 -0.030358746
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## 923    8.740775e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 924   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 925    1.514753e-01  0.40074753 -0.159375873 -0.19835608  0.916124345
## 926   -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 928    3.492662e-02  0.07734464  0.026682289 -0.19835608 -0.277735009
## 929    2.680241e-01  0.49776839 -0.159375873 -0.19835608 -0.277735009
## 930   -6.177463e-01  2.69690800 -0.159375873 -0.19835608 -0.277735009
## 931    1.864400e-01  0.62712954 -0.159375873  5.58020453 -0.180935601
## 932    1.747851e-01 -0.31073882 -0.159375873 -0.19835608  0.087951640
## 933   -3.380293e-01 -0.31073882 -0.159375873 -0.19835608  0.238528496
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## 936    1.048559e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 937    1.573370e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 938    6.526349e-01  0.07734464 -0.159375873 -0.19835608 -0.277735009
## 939    3.262984e-01 -0.14903738  0.181730758 -0.19835608 -0.277735009
```

```
## 940 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 945  9.090421e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 947  1.864400e-01 -0.01967622 -0.159375873 -0.19835608 -0.277735009
## 948 -9.327698e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 949  4.658149e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 950  7.575287e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 951  5.244313e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 962  1.247033e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 963 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 965 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 967 -9.327698e-02 -0.31073882 -0.159375873 -0.19835608  1.679764112
## 968 -2.331355e-01  1.85606050  1.918273608  1.63030234 -0.277735009
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## 981 -1.632062e-01 -0.31073882 -0.159375873 -0.19835608 -0.137913643
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## 987  1.864400e-01 -0.01967622 -0.159375873 -0.19835608 -0.277735009
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## 989 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 991 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 992 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.184751047
## 993  8.624226e-01  0.78883099 -0.159375873 -0.19835608  0.346083393
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## 997   2.459140e+00 -0.31073882  0.987982796 -0.19835608  0.120218109
## 998  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 999  -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1000 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1001 -1.165867e-01 -0.31073882 -0.159375873 -0.19835608  2.045450761
## 1002  2.004600e+00 -0.31073882  1.236060345 -0.19835608  0.206262027
## 1003 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.507936817
## 1004 -2.334775e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1005 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1006 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1007 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1008 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1009  5.477410e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1012 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1013 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1014 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1018  1.165107e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1019 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1021 -1.169287e-02  1.04755329 -0.159375873 -0.19835608 -0.277735009
## 1022 -3.496842e-01 -0.31073882 -0.159375873 -0.19835608 -0.030358746
## 1023 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1025 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1026 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1045  1.526750e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1046  1.223724e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1101 -6.177463e-01  2.01776195 -0.159375873 -0.19835608 -0.277735009
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## 1104 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1107 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1122 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.571948676
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## 1254 -2.334775e-02  1.33861589 -0.159375873 -0.19835608  0.270794965
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## 1308 -1.282416e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1309 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1312  3.799451e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1313 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1315 -6.177463e-01  0.20670580 -0.159375873  0.38681462 -0.105647174
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## 1317 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1327 -6.177463e-01 -0.31073882 -0.159375873 15.93041118 -0.277735009
## 1328 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1329 -5.361622e-01  0.17436551 -0.159375873 -0.19835608 -0.202446581
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## 1657 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1658 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1659 -1.169287e-02  1.72669935  0.150721064  0.16737561 -0.051869725
## 1660 -3.030647e-01 -0.31073882  4.057942476 -0.19835608 -0.277735009
## 1661 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1662  9.320098e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1663 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1664  3.492662e-02  1.50031733 -0.159375873 -0.19835608  0.324572413
## 1665 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1666 -3.263744e-01  4.60498502 -0.159375873  2.58120472 -0.277735009
## 1667  1.456821e+00  0.23904608  0.367788921 -0.19835608 -0.277735009
## 1668  8.740775e-01 -0.31073882 -0.159375873 -0.19835608  0.754792000
## 1669 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1670 -3.263744e-01  4.60498502 -0.159375873  2.58120472 -0.277735009
## 1671 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1672 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1673 -5.831237e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1674 -6.177463e-01  6.86880521 -0.159375873 -0.19835608 -0.277735009
## 1675  6.293251e-01  0.30372666  2.538467483  0.13080244 -0.277735009
## 1676 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1678  2.330595e-01  1.79137993  3.778855232 -0.08863657 -0.030358746
## 1679  6.526349e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1680 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1681  2.563692e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1682  3.729179e-01 -0.31073882 -0.159375873 -0.19835608  0.636481614
## 1683 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1684 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1685 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1686 -6.177463e-01  4.08754041 -0.159375873 -0.19835608 -0.277735009
## 1687 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1688 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  2.109983699
## 1689 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1690  6.989124e-02  0.23904608 -0.159375873  7.88431414 -0.008847767
## 1691 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1692  7.924934e-01 -0.31073882 -0.159375873 -0.19835608 -0.019603256
## 1693 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1694 -3.500262e-02 -0.31073882  1.701205752 -0.19835608  0.701014552
## 1695 -2.564452e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
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## 1696  3.612631e-01  2.40584541 -0.159375873 -0.19835608 -0.277735009
## 1697 -3.030647e-01 -0.31073882 -0.159375873 -0.19835608  0.883857876
## 1698 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1699 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1700 -1.748611e-01  0.07734464 -0.159375873  4.00755829 -0.277735009
## 1701 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1702  1.161687e-02  1.43563676 -0.159375873 -0.19835608 -0.277735009
## 1703  2.657273e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1704 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1705  5.477410e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1706 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1707 -5.128524e-01  0.04500435 -0.159375873 -0.19835608 -0.277735009
## 1708  3.492662e-02 -0.14903738 -0.159375873 -0.19835608 -0.159424622
## 1709 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1710 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1711 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1712 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1713 -6.177463e-01  1.43563676 -0.159375873 -0.19835608 -0.277735009
## 1714 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1715 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1716  1.713228e+00 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1717  1.608334e+00  0.33606695 -0.159375873  1.63030234  0.367594372
## 1718  5.244313e-01 -0.31073882  0.429808308 -0.19835608  0.776302979
## 1719 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  1.712030581
## 1720 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1721  1.048901e+00 -0.31073882  0.088701677 -0.19835608  0.292305944
## 1722 -6.177463e-01 -0.31073882 -0.159375873 -0.19835608  0.797813959
## 1723 -3.500262e-02 -0.31073882 -0.159375873 -0.19835608 -0.277735009
## 1724 -6.177463e-01 -0.31073882 -0.159375873  4.48300948 -0.277735009
##              V17         V18          V19         V20          V21
## 1    -0.310262311 -0.371882840  0.410894666 -0.18378346 -0.672980848
## 2    -0.310262311 -0.371882840 -0.401151175 -0.18378346 -0.269675246
## 3     0.125211001 -0.371882840 -0.917380317 -0.18378346 -0.672980848
## 4    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 5    -0.310262311 -0.371882840 -0.186539060 -0.18378346 -0.672980848
## 6    -0.310262311 -0.371882840  0.294888117 -0.18378346 -0.218189425
## 7    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 8    -0.310262311 -0.371882840  0.590704817 -0.18378346 -0.672980848
## 9    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 10    0.125211001 -0.371882840  0.561703179 -0.18378346  0.356735583
## 11    1.322762611 -0.371882840 -0.517157724 -0.18378346  1.927053140
## 12   -0.310262311 -0.371882840  0.944524790 -0.18378346 -0.672980848
## 13   -0.310262311 -0.272585874 -0.824575078 -0.18378346 -0.535685324
## 14   -0.310262311 -0.371882840  0.033873383 -0.18378346 -0.381227860
## 15   -0.310262311 -0.371882840 -0.099534148 -0.18378346 -0.672980848
## 16   -0.310262311 -0.371882840  0.590704817 13.03483854  0.468288196
## 17   -0.310262311 -0.371882840  0.474698268 -0.18378346  0.382478493
## 18   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 19   -0.310262311 -0.371882840  0.173081241 -0.18378346 -0.672980848
## 20   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 21   -0.310262311 -0.371882840  0.318089427 -0.18378346 -0.672980848
## 22   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 23   -0.310262311 -0.371882840 -0.354748556 -0.18378346  0.210859088
## 24   -0.310262311 -0.371882840 -0.836175733 -0.18378346 -0.501361443
```

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## 25   -0.310262311 -0.371882840  0.451496958 -0.18378346 -0.672980848
## 26    0.821968301 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 27   -0.310262311 -0.371882840 -0.203940042 -0.18378346 -0.123798752
## 28    0.800194636 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 29   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 30   -0.310262311 -0.371882840  0.805316932 -0.18378346 -0.672980848
## 31   -0.310262311 -0.371882840  1.640564082 -0.18378346  0.605583720
## 32   -0.310262311 -0.371882840 -0.424352485 -0.18378346  1.686785973
## 33   -0.310262311 -0.371882840 -0.227141352 -0.18378346 -0.441294651
## 34   -0.310262311 -0.371882840  1.333146728 -0.18378346 -0.672980848
## 35   -0.310262311  2.348854031 -0.354748556 -0.18378346  0.210859088
## 36   -0.310262311 -0.371882840 -0.725969511 -0.18378346 -0.672980848
## 37   -0.310262311 -0.371882840 -0.209740370 -0.18378346 -0.672980848
## 38   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 39    3.674318499  1.077852865  0.532701542 -0.18378346  0.262344910
## 40    0.059890004 -0.213007695 -0.256142989 -0.18378346  2.021443813
## 41   -0.310262311 -0.371882840  6.298227014 -0.18378346 -0.672980848
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## 43   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 44   -0.310262311 -0.371882840 -0.430152812 -0.18378346  2.416168445
## 45   -0.310262311  1.057993471 -0.615763290  0.16342237 -0.303999127
## 46   -0.310262311 -0.371882840  0.242685170 -0.18378346 -0.672980848
## 47   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 48   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
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## 50   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 51   -0.310262311 -0.371882840 -0.128535786 -0.18378346 -0.063731960
## 52   -0.310262311 -0.371882840  1.831974888 -0.18378346  0.699974393
## 53   -0.310262311  1.018274685 -0.708568529  0.16342237  0.047820653
## 54    1.126799620 -0.371882840  0.979326755 -0.18378346 -0.672980848
## 55   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 56   -0.310262311  1.256587404  1.211339852 -0.18378346  0.391059464
## 57   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
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## 59   -0.310262311 -0.371882840 -0.447553795 -0.18378346 -0.672980848
## 60   -0.310262311 -0.371882840 -0.383750193 -0.18378346  1.008889322
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## 63   -0.310262311 -0.371882840 -0.180738732 -0.18378346  0.468288196
## 64   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 65   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 66   -0.310262311 -0.371882840 -0.754971149 -0.18378346 -0.381227860
## 67   -0.310262311 -0.371882840  0.074475675 -0.18378346 -0.672980848
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## 71    1.780009589 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 72   -0.310262311 -0.371882840 -0.441753467 -0.18378346  0.082144534
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## 75   -0.310262311 -0.371882840  4.018698331 -0.18378346 -0.672980848
## 76    1.257441614 -0.252726481  1.681166375  0.41142654  0.262344910
## 77   -0.310262311 -0.371882840  0.706711365 -0.18378346 -0.672980848
## 78   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
```

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## 79    -0.310262311 -0.371882840  2.939837428 -0.18378346  1.884148289
## 80    -0.310262311  2.626885536  0.219483861 -0.18378346  0.622745661
## 81    -0.310262311 -0.371882840  0.805316932 -0.18378346  0.622745661
## 82    -0.310262311 -0.371882840  0.236884843 -0.18378346 -0.672980848
## 83    -0.310262311 -0.371882840 -0.192339387 -0.18378346  3.840609507
## 84    -0.310262311 -0.073991942 -0.778172458 -0.18378346  0.245182969
## 85    -0.310262311  0.382774102  1.066331666 -0.18378346  0.322411702
## 86    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 87    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 88    -0.310262311 -0.371882840  0.434095976 -0.18378346 -0.672980848
## 89     0.016342673 -0.371882840 -0.865177370 -0.18378346 -0.612914057
## 90    -0.310262311 -0.371882840  0.115077967 -0.18378346  0.905917679
## 91    -0.310262311  3.222667332 -0.952182281 -0.18378346  2.055767694
## 92    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 93    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 94    -0.310262311 -0.371882840  1.582560808 -0.18378346 -0.672980848
## 95    -0.310262311 -0.371882840  1.193938870 -0.18378346  5.676937143
## 96     2.150161905 -0.371882840  1.715968339 -0.18378346  1.051794174
## 97    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 98    -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 99     2.868692871  3.699292769  0.149879931 -0.18378346  0.202278118
## 100   -0.310262311 -0.371882840  2.406207304 -0.18378346 -0.672980848
## 101   -0.310262311  0.005445631  0.416694993 -0.18378346  0.339573642
## 102   -0.310262311 -0.054132549  0.219483861  0.63463029  0.047820653
## 103   -0.310262311 -0.371882840  1.275143454 -0.18378346  2.622111731
## 104   -0.310262311 -0.371882840  0.915523153 -0.18378346 -0.672980848
## 105   -0.310262311 -0.371882840  0.138279277 -0.18378346 -0.672980848
## 106   -0.310262311 -0.371882840  1.257742472  0.38662612  0.348154612
## 107    0.582457980 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 108   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 109    1.388083608 -0.371882840 -0.041530874 -0.18378346  1.352128133
## 110   -0.310262311  0.720383787  0.990927410 -0.18378346  0.279506850
## 111   -0.310262311 -0.371882840 -0.128535786 -0.18378346 -0.672980848
## 112   -0.310262311 -0.371882840  0.857519879 -0.18378346 -0.672980848
## 113   -0.310262311  5.645513305  0.805316932 -0.18378346  1.927053140
## 114   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 115    3.870281490  0.462211675  0.909722826 -0.18378346  0.605583720
## 116   -0.310262311  3.997183668  0.091876657 -0.18378346  1.738271794
## 117   -0.310262311 -0.371882840  0.996727737 -0.18378346 -0.672980848
## 118   -0.310262311  0.223898956  0.648708091 -0.18378346 -0.149541663
## 119   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 120   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
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## 123   -0.310262311 -0.371882840  0.439896303 -0.18378346 -0.672980848
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## 125   -0.310262311  3.361683085  0.138279277 -0.18378346  0.940241560
## 126   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 127   -0.310262311 -0.034273156 -0.644764927 -0.18378346 -0.527104354
## 128   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
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## 130   -0.310262311 -0.371882840 -0.952182281 -0.18378346 -0.672980848
## 131   -0.310262311  2.646744929  0.225284188 -0.18378346  0.631326631
## 132   -0.310262311 -0.371882840 -0.638964600 -0.18378346 -0.672980848
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## 133  -0.310262311 -0.371882840  1.275143454 -0.18378346 -0.672980848
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## 135  -0.310262311 -0.371882840 -0.221341024 -0.18378346 -0.672980848
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## 137  -0.310262311 -0.371882840 -0.598362308 -0.18378346 -0.672980848
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## 1723 -0.117934389 -0.295168191 -0.2306970769  0.279013117  0.2881124195
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## 2     0.0054137013 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 3    -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 4     0.5851998565 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 5     0.0586913480 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 6    -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 7    -0.2170988231  0.54533777  0.62136144 -0.232505731 -0.15193759 -0.1435323
## 8    -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 9     2.0205623380 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 10   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 11   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 13   -0.2014289270 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 15   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
## 16   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 19   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 25   -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 1002 -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
```

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## 1012 -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 1017 -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 1589  0.1182369531 -0.23946605 -0.16476947  2.076013365 -0.15193759  3.4338085
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## 1591 -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759 -0.1435323
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## 1703 -0.2170988231 -0.23946605 -0.16476947 -0.232505731 -0.15193759  0.8928936
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## 1       1.964984278 -0.14625708  1.835428012 -0.24840201 -0.32331505 -0.06046324
## 2      -0.153528234  0.21921770 -0.202441590  0.99601659 -0.32331505 -0.06046324
## 3      -0.153528234 -0.14625708 -0.202441590 -0.08954006 -0.16803675 -0.06046324
## 4      -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 5      -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 6      -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 7      -0.153528234 -0.14625708  0.511683655  0.83715464  0.73775338 -0.06046324
## 8      -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 9      -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 10     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 11     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 12     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 13      0.860460661 -0.14625708 -0.202441590 -0.24840201  1.56590435 -0.06046324
## 14     -0.153528234  0.98339224  0.389759833  0.65181570  0.55659535 -0.06046324
## 15     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 16     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 17     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
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## 19     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 20     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 21     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 22     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 23     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 24     -0.153528234  0.51824252  0.494265966  0.28113782  2.26465673 -0.06046324
## 25     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 26     -0.153528234 -0.14625708 -0.202441590  0.33409181  0.03900100 -0.06046324
## 27     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 28      3.576502343 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 29     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 30     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
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## 32     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 33     -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
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## 405   -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 406   -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
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## 1683 -0.153528234 -0.14625708  2.950160103 -0.24840201 -0.32331505 -0.06046324
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## 1686 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1687 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1688 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1689 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1690 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1691 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
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## 1693 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1694 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1695 -0.153528234 -0.14625708 -0.202441590  0.57238473  0.47895620 -0.06046324
## 1696 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1697 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1698 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1699 -0.153528234  1.68111681  0.755531300  1.20783252  1.10006943 -0.06046324
## 1700 -0.153528234 -0.14625708 -0.202441590  0.06932189 -0.32331505 -0.06046324
## 1701 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1702 -0.153528234 -0.14625708 -0.202441590  1.18135553 -0.32331505 -0.06046324
## 1703 -0.153528234 -0.14625708 -0.202441590  0.57238473 -0.32331505 -0.06046324
## 1704 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1705 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1706 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1707 -0.153528234  0.08631778 -0.202441590 -0.24840201 -0.32331505 -0.06046324
```

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## 1709 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1710 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1711 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1712 -0.153528234  1.14951713  0.476848277  3.88200866  0.68599394 -0.06046324
## 1713 -0.153528234 -0.14625708  0.267836011 -0.24840201 -0.32331505 -0.06046324
## 1714 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1715 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1716 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1717 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1718 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1719 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1720 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1721 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1722 -0.153528234 -0.14625708 -0.202441590 -0.24840201 -0.32331505 -0.06046324
## 1723 -0.153528234  1.51499191  0.668442855  1.07544757  0.97067084 -0.06046324
## 1724  4.481849571 -0.14625708 -0.202441590 -0.24840201  2.98928883 -0.06046324
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## 2    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 3    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 4    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 5    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 6    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 7    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 8    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 9    -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 10   -0.19805329  1.32130196 -0.12851656 -0.1662754768 -0.2111120988
## 11   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 12   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 13   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 14    0.91081118  0.83724150 -0.12851656 -0.1662754768  1.5850977116
## 15   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 16   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 17   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
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## 19   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 20   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 21   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 22   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 23   -0.19805329 -0.19138696 -0.12851656  4.1070741700 -0.2111120988
## 24    0.45421993  0.41368861 -0.12851656 -0.1662754768  0.8454819073
## 25   -0.19805329 -0.19138696 -0.12851656  0.4975458275 -0.2111120988
## 26    0.03024234 -0.19138696 -0.12851656 -0.1662754768  0.1586958034
## 27   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 28   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 29   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 30   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 31   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 32   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 33    0.22592430 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 34   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 35   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
## 36   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
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## 37    6.06376959 -0.19138696  4.60703035 -0.1662754768  9.9321903599
## 38   -0.19805329 -0.19138696 -0.12851656 -0.1662754768 -0.2111120988
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```

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## 3    -1.617851e-01 -0.2667659370 -0.21141009 -0.07869442 -0.10740623
## 4    -1.617851e-01  2.9106963867 -0.21141009 -0.07869442 -0.10740623
## 5    -1.617851e-01  0.2162083362  0.32441308 -0.07869442 -0.10740623
## 6    -1.617851e-01  1.0169288418 -0.21141009 -0.07869442 -0.10740623
## 7    -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
## 8    -1.617851e-01  0.4958250207 -0.21141009 -0.07869442 -0.10740623
## 9    -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
## 10   -1.617851e-01  0.0382704461 -0.21141009 -0.07869442  0.42779264
## 11   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
## 12   -1.617851e-01 -0.3430250327  0.77499165 -0.07869442 -0.10740623
## 13   -2.698615e-02 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
## 14   -1.617851e-01  0.0891098433 -0.21141009 -0.07869442 -0.10740623
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## 16   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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## 18   -1.617851e-01  3.8893547824 -0.21141009 -0.07869442 -0.10740623
## 19   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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## 23   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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## 25   -1.617851e-01  0.2670477334  0.96983644 -0.07869442 -0.10740623
## 26   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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## 39   -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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## 72   -1.617851e-01  0.2162083362 -0.21141009 -0.07869442 -0.10740623
## 73   -1.617851e-01  0.4449856235 -0.21141009 -0.07869442 -0.10740623
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## 88   -1.617851e-01  0.1526590898 -0.21141009 -0.07869442 -0.10740623
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## 97    -1.617851e-01 -0.3430250327  8.48353858 -0.07869442 -0.10740623
## 98    -1.617851e-01  4.9442722739 -0.21141009 -0.07869442 -0.10740623
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## 141   -1.617851e-01  0.3305969799 -0.21141009 -0.07869442 -0.10740623
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## 146    7.009279e-01  0.0636901447  0.56796906 -0.07869442 -0.10740623
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## 1335 -1.617851e-01 -0.3430250327 -0.21141009 -0.07869442 -0.10740623
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##               V49           V50         V51          V52          V53
## 1     -0.155784145  2.1163728981 -0.14922208 -0.078298941 -0.333527479
## 2      0.874277910  0.8333622543  0.89455543 -0.247420916 -0.006561355
## 3     -0.028728033 -0.2224485881 -0.14922208 -0.311848335 -0.333527479
## 4     -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 5     -0.155784145  0.0671197864 -0.14922208 -0.311848335 -0.333527479
## 6     -0.155784145 -0.1511702190 -0.14922208 -0.311848335 -0.333527479
## 7     -0.155784145  0.1027589709 -0.14922208 -0.311848335 -0.333527479
## 8     -0.155784145  0.4279665300 -0.14922208 -0.046085231 -0.333527479
## 9     -0.155784145 -0.6011149240 -0.14922208  0.937583402 -0.333527479
## 10    -0.155784145  0.0270257038 -0.14922208  0.093124014 -0.089392773
## 11    -0.155784145 -0.6011149240 -0.14922208  2.275602842  5.059233804
## 12    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 13     0.175469291  0.3388685686  0.22025669 -0.311848335 -0.263774706
## 14    -0.155784145  0.4858802049 -0.14922208 -0.311848335 -0.333527479
## 15     0.552099910 -0.6011149240 -0.14922208  0.679873725 -0.333527479
## 16    -0.155784145 -0.6011149240 -0.14922208  0.492343916 -0.333527479
## 17     0.955956839 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 18    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 19    14.501045975 -0.6011149240 -0.14922208 -0.256624833 -0.333527479
## 20    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 21    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 22    -0.155784145 -0.6011149240 -0.14922208  0.143745558 -0.333527479
## 23    -0.155784145  0.2230412188 -0.14922208  0.113832828 -0.333527479
## 24    -0.155784145  1.3100363476  0.12788700 -0.311848335 -0.333527479
## 25    -0.155784145  0.0671197864 -0.14922208 -0.311848335 -0.333527479
## 26     0.347902586  0.0715746845 -0.05685239 -0.311848335 -0.246336513
## 27    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 28    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 31    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 32    -0.155784145  0.0270257038 -0.14922208  0.340479285 -0.333527479
## 33    -0.155784145  0.7086251083 -0.14922208  0.279503334 -0.333527479
## 34    -0.155784145  0.6418016373 -0.14922208 -0.151930277 -0.333527479
## 35    -0.155784145 -0.1823545055 -0.14922208 -0.311848335 -0.333527479
## 36    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 37     1.632076866 -0.1645349132  2.57568380 -0.311848335 -0.333527479
## 38    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 39    -0.155784145  0.2141314227 -0.14922208  0.179410736 -0.067595031
## 40    -0.155784145 -0.2224485881  0.10941306 -0.206003290 -0.272493803
## 41    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 42    -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 43    -0.155784145   2.8514310795  -0.14922208  -0.311848335  -0.333527479
## 44    -0.155784145   0.0181159076  -0.14922208   0.331275368  -0.333527479
## 45    -0.155784145  -0.6011149240  -0.14922208   0.683325194  -0.233257868
## 46    -0.155784145   0.3611430589   0.84837058  -0.063342575  -0.333527479
## 47    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
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## 49    -0.155784145   1.0605620558  -0.14922208  -0.169187621   0.207056513
## 50    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 51    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 52    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 53    -0.155784145  -0.6011149240  -0.14922208   0.358887119  -0.333527479
## 54    -0.155784145   0.5304291856  -0.14922208  -0.311848335  -0.333527479
## 55    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 56    -0.155784145  -0.2981818553  -0.14922208   0.240386687   2.059864553
## 57    -0.155784145  -0.6011149240  -0.14922208   0.783417792  -0.333527479
## 58    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
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## 61    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 62    -0.155784145   0.3611430589  -0.14922208  -0.063342575  -0.333527479
## 63     0.801674417  -0.6011149240  -0.14922208  -0.069095024  -0.333527479
## 64    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 65    -0.155784145   4.3482768307  -0.14922208  -0.311848335  -0.333527479
## 66    -0.155784145   0.0626648883  -0.14922208  -0.311848335  -0.333527479
## 67    -0.155784145   0.3566881609  -0.14922208  -0.188745945  -0.333527479
## 68    -0.155784145  -0.4852875742   3.01905832  -0.311848335  -0.333527479
## 69    -0.155784145  -0.2001740977  -0.14922208   0.311717044  -0.333527479
## 70    -0.155784145  -0.6011149240   1.78130446  -0.311848335  -0.333527479
## 71     0.661005149   0.6017075547   0.26644153  -0.311848335  -0.333527479
## 72    -0.155784145   0.3210489763  -0.14922208  -0.311848335  -0.333527479
## 73    -0.155784145  -0.3828249186  -0.14922208  -0.027677397  -0.119909611
## 74    -0.155784145  -0.6011149240  -0.14922208   6.079121558  -0.333527479
## 75    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 76    -0.110406962  -0.3694602244  -0.14922208  -0.300343439   0.394517092
## 77     0.497647291   0.2542255053   0.73752696  -0.311848335  -0.333527479
## 78    -0.155784145  -0.2714524669   2.59415774  -0.311848335  -0.333527479
## 79    -0.155784145  -0.6011149240  -0.14922208   0.827136398  -0.333527479
## 80    -0.155784145  -0.2536328746  -0.14922208   0.185163185   1.549797399
## 81     0.093790361  -0.1110761364  -0.14922208  -0.248571406  -0.333527479
## 82    -0.155784145   0.9892836867  -0.14922208  -0.311848335  -0.333527479
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## 88    -0.155784145  -0.1378055248   0.33110032  -0.311848335  -0.333527479
## 89    -0.105869244  -0.3917347147  -0.14922208  -0.311848335  -0.233257868
## 90    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
## 91    -0.155784145   0.2854097918  -0.14922208  -0.311848335  -0.333527479
## 92    -0.155784145  -0.6011149240  -0.14922208  -0.311848335  -0.333527479
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## 100   -0.155784145 -0.6011149240 -0.14922208  0.006837292 -0.333527479
## 101   -0.155784145 -0.4674679819 -0.14922208 -0.136973912 -0.333527479
## 102   -0.155784145  0.3076842821 -0.14922208  0.393401808  0.664809088
## 103   -0.155784145 -0.6011149240 -0.14922208 -0.047235721  0.669168636
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## 106   -0.155784145 -0.1021663402 -0.14922208  0.891563817 -0.172224191
## 107   -0.155784145 -0.0798918499 -0.14922208 -0.311848335 -0.146066901
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## 110   -0.155784145  0.1072138690 -0.14922208  0.239236197 -0.333527479
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## 120   -0.155784145 -0.6011149240 -0.14922208 -0.311848335 13.878600075
## 121   -0.155784145  1.3055814496 -0.14922208 -0.311848335 -0.333527479
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## 136    3.324645794 -0.4362836954 -0.14922208  6.407011102  5.381840380
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## 143   -0.055954343 -0.5031071664  0.02628034 -0.286537564 -0.237617416
## 144   -0.155784145 -0.6011149240 -0.14922208 -0.116265098  0.407595737
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## 151  -0.069567497 -0.3694602244  0.45118091  0.163303882  0.381438447
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## 176   0.334289432 -0.1199859325 -0.14922208 -0.311848335  0.137303740
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## 180  -0.155784145  0.4235116319 -0.14922208  0.540664480  1.000494309
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## 1627 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 1642 -0.155784145  0.5215193894 -0.14922208  1.624425711  0.398876640
## 1643 -0.155784145  3.2657365999 -0.14922208  3.017668653  3.450560470
## 1644 -0.155784145 -0.6011149240 -0.14922208 -0.211755738 -0.333527479
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## 1659 -0.155784145 -0.5298365549 -0.14922208  0.708635966 -0.194021933
## 1660 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
## 1661 -0.155784145  0.5259742875  2.18773110 -0.311848335 -0.333527479
## 1662 -0.155784145  0.0359354999 -0.14922208 -0.311848335 -0.333527479
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## 1668 -0.155784145 -0.3605504282 -0.14922208 -0.123168036 -0.098111870
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## 1676 -0.155784145 -0.6011149240 -0.14922208 -0.115114609  0.411955285
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## 1682 -0.155784145 -0.2358132823 -0.14922208 -0.311848335  0.023955484
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## 1684 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 1690 -0.155784145 -0.3115465495 -0.14922208  0.151798985  0.176539675
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## 1701 -0.155784145  1.5862400279  1.35640388 -0.311848335 -0.333527479
## 1702 -0.155784145 -0.2135387920 -0.14922208 -0.211755738 -0.333527479
## 1703 -0.155784145  0.1294883594 -0.14922208 -0.186444966 -0.098111870
## 1704 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 1710 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 1716 -0.155784145 -0.6011149240 -0.14922208 -0.311848335 -0.333527479
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## 1722 -0.155784145  1.0917463423 -0.14922208 -0.311848335 -0.333527479
## 1723  0.220846474  0.1428530536 -0.14922208  0.265697459 -0.333527479
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##                V54           V55           V56          V57 V58
## 1    -0.134684699 -0.0848742899 -0.2731124978 -0.423131599   0
## 2    -0.134684699 -0.0847231174 -0.0931187695  0.680792554   0
## 3    -0.134684699 -0.0909211903 -0.2183317979  0.811628009   0
## 4    -0.134684699 -0.1163484065 -0.3591964548 -0.498770847   0
## 5    -0.134684699 -0.1129319078 -0.3044157549 -0.402688559   0
## 6    -0.134684699 -0.1055546893 -0.2652866835 -0.441530335   0
## 7    -0.134684699 -0.1021684251 -0.2887641263 -0.282074624   0
## 8    -0.134684699 -0.1084572015 -0.2574608692 -0.472194895   0
## 9    -0.134684699 -0.1314656575 -0.3826738976 -0.541701230   0
## 10   -0.134684699  0.1285812939  0.7677208005  1.768362276   1
## 11   -0.134684699  3.0371101473  2.7711292543  0.533602667   1
## 12   -0.134684699 -0.1145948054 -0.3044157549 -0.439486031   1
## 13   -0.134684699 -0.0774366025 -0.0226864410  1.680457204   0
## 14   -0.134684699 -0.1104224441 -0.2887641263 -0.318872096   0
## 15   -0.134684699  0.2055885703  1.7381217703  0.619463435   1
## 16    1.680665928  0.1164572586 -0.0305122553 -0.359758175   1
## 17   -0.134684699 -0.1264467301 -0.3670222690 -0.519213887   0
## 18   -0.134684699 -0.1223953069 -0.3591964548 -0.521258190   0
## 19    1.742995563  0.0137204209 -0.0539896981  0.294419101   0
## 20   -0.134684699 -0.1314656575 -0.3826738976 -0.537612622   0
## 21   -0.134684699 -0.0618053650 -0.0226864410 -0.392467039   0
## 22    1.407973774 -0.0851161660 -0.3122415691 -0.470150591   0
## 23   -0.134684699 -0.0928561985 -0.3044157549 -0.464017679   0
## 24   -0.134684699 -0.0799763006  0.0007910018  0.159495037   0
## 25    0.157485467 -0.0599005913 -0.2261576121 -0.210523984   0
## 26   -0.134684699 -0.0936725300 -0.2026801693  0.924064729   0
## 27   -0.134684699 -0.1283515038 -0.3670222690 -0.482416415   1
## 28   -0.134684699 -0.1137482393 -0.3435448262 -0.359758175   0
## 29   -0.134684699 -0.0609285644 -0.3278931977 -0.527391102   0
## 30   -0.134684699 -0.1232418729 -0.3591964548 -0.519213887   0
## 31   -0.134684699 -0.1032568671 -0.3278931977 -0.488549327   0
## 32   -0.134684699 -0.0740201037 -0.1713769122 -0.369979695   1
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## 34   -0.134684699 -0.0973006702 -0.2731124978 -0.447663247   0
## 35   -0.134684699 -0.0670359338 -0.2887641263 -0.304561968   1
## 36   -0.134684699 -0.1221231963 -0.3278931977 -0.435397423   0
## 37   -0.134684699 -0.1068850074 -0.2887641263 -0.329093616   0
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## 39   -0.134684699 -0.0280636608  1.1120566285  0.075678574   1
## 40   -0.134684699 -0.0359246313 -0.0148606268  1.782672404   1
## 41   -0.134684699 -0.1314656575 -0.3826738976 -0.543745534   1
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## 44   -0.134684699 -0.0740201037 -0.1713769122 -0.369979695   1
## 45    0.044513003 -0.0065064609  0.6425077721  1.498514149   1
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## 46    0.286040339 -0.0784343410 -0.1948543550 -0.226878416   0
## 47   -0.134684699 -0.1138389428 -0.3278931977 -0.470150591   0
## 48   -0.134684699 -0.1213975683 -0.3591964548 -0.523302494   0
## 49   -0.134684699 -0.1078525114 -0.2965899406 -0.314783488   1
## 50   -0.134684699 -0.1087897810 -0.3591964548 -0.519213887   0
## 51   -0.134684699 -0.1226371829 -0.3591964548 -0.376112607   0
## 52   -0.134684699 -0.1314656575 -0.3826738976 -0.525346798   0
## 53    0.126320649  0.0020196687  0.6425077721  1.478071109   1
## 54   -0.134684699 -0.1176182556 -0.3357190120 -0.476283503   0
## 55   -0.134684699 -0.1129923768 -0.3357190120 -0.488549327   0
## 56   -0.134684699 -0.0659777262 -0.2418092407 -0.314783488   1
## 57   -0.134684699 -0.0649497532 -0.2965899406 -0.515125279   0
## 58   -0.134684699 -0.1012311555 -0.3513706405 -0.531479710   0
## 59   -0.134684699 -0.0970890287 -0.0226864410 -0.325005008   0
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## 65   -0.134684699 -0.0679732033 -0.3044157549 -0.484460719   0
## 66   -0.134684699 -0.0906490798 -0.2809383120 -0.163504993   0
## 67   -0.134684699 -0.0788273896 -0.3044157549 -0.374068303   0
## 68   -0.033399041 -0.0309057040 -0.1713769122  1.132583736   0
## 69   -0.134684699 -0.1020777216 -0.2418092407 -0.249365760   1
## 70   -0.134684699 -0.0619263030 -0.2887641263 -0.412910079   0
## 71   -0.134684699 -0.1012311555 -0.2809383120 -0.183948033   1
## 72    0.671704957 -0.0834532684 -0.0774671410 -0.277986016   0
## 73   -0.134684699 -0.0488649981  0.3138235727  0.108387438   0
## 74   -0.134684699 -0.0626821655 -0.2809383120 -0.353625264   1
## 75   -0.134684699 -0.1314656575 -0.3826738976 -0.533524014   0
## 76   -0.134684699 -0.1093037675 -0.2965899406  0.355748220   1
## 77   -0.134684699 -0.0919793979 -0.2418092407 -0.132840433   0
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## 83   -0.134684699 -0.0256449006 -0.1948543550 -0.437441727   1
## 84   -0.134684699 -0.0928864330 -0.2339834264  0.443653292   0
## 85   -0.134684699 -0.1246628945 -0.3513706405 -0.447663247   0
## 86   -0.134684699 -0.1012311555 -0.3591964548 -0.535568318   0
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## 88    0.067886616 -0.0663707747  0.0555717017 -0.044935361   0
## 89   -0.134684699 -0.1235139834 -0.3122415691 -0.008137890   1
## 90   -0.134684699 -0.1170740345 -0.3278931977 -0.421087295   0
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## 94   -0.134684699 -0.1169530965 -0.3200673834 -0.472194895   0
## 95   -0.134684699 -0.1012311555 -0.3591964548 -0.531479710   0
## 96   -0.134684699 -0.0558189336  0.2277396157  0.691014074   1
## 97   -0.134684699  0.0045896013 -0.3122415691 -0.525346798   0
## 98   -0.134684699 -0.1213975683 -0.3591964548 -0.523302494   0
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## 100  -0.134684699 -0.1220324928 -0.3670222690 -0.504903759  1
## 101  -0.134684699 -0.1206719403 -0.2418092407 -0.245277152  1
## 102   0.063991014  0.1301232535  0.7911982433  1.267507799  1
## 103  -0.134684699  0.0057385124 -0.0696413267 -0.400644255  1
## 104  -0.134684699 -0.1105433821 -0.3513706405 -0.502859455  0
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## 107  -0.134684699 -0.0930073710 -0.2026801693  0.525425451  0
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## 111   1.739099961  0.0639701632 -0.0539896981  0.306684925  0
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## 116  -0.134684699 -0.0846021794 -0.0539896981 -0.083777137  0
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## 118  -0.134684699 -0.0972402012 -0.1557252837 -0.085821441  1
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## 150  -0.013921030 -0.0476858525  0.1494814729  0.531558363  1
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## 152  -0.134684699 -0.0374061219 -0.2339834264 -0.093998657  1
## 153  -0.134684699 -0.1173159105 -0.3278931977 -0.355669567  1
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## 177  -0.134684699 -0.1131133148 -0.3435448262 -0.455840463  0
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## 212  -0.134684699 -0.1098782231 -0.3435448262 -0.523302494  0
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## 352   0.399012803 -0.0694244594  -0.2887641263  -0.310694880   0
## 353   0.352265577  0.0560487237   4.2658597804   4.385071380   1
## 354  -0.134684699  0.0079153966  -0.0618155124   0.128830478   0
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## 356  -0.134684699 -0.1289561938  -0.3748480833  -0.521258190   0
## 357  -0.134684699 -0.0114044502  -0.0774671410   0.539735579   1
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## 361   0.706765377 -0.0962122282  -0.3435448262  -0.468106287   0
## 362  -0.134684699 -0.1012311555  -0.3513706405  -0.531479710   0
## 363  -0.134684699 -0.1314656575  -0.3826738976  -0.537612622   0
## 364  -0.134684699 -0.1050104682  -0.3591964548  -0.517169583   0
## 365   0.660018151 -0.0975727808  -0.3122415691  -0.369979695   0
## 366  -0.134684699 -0.1127505007  -0.2965899406  -0.408821471   0
## 367  -0.134684699 -0.0558794026  -0.3200673834  -0.504903759   0
## 368  -0.134684699 -0.0834532684  -0.1635510980  -0.367935391   0
## 369  -0.134684699 -0.0343826717   0.2433912442   0.838203961   0
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## 371  -0.134684699 -0.1307400294 -0.3670222690 -0.286163232  0
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## 373  -0.134684699 -0.0256449006 -0.1244220266 -0.235055632  0
## 374  -0.134684699 -0.0886233682 -0.0696413267  0.435476076  1
## 375  -0.134684699 -0.1119946382 -0.2887641263 -0.396555647  0
## 376  -0.134684699 -0.0862348425 -0.2652866835  0.110431742  0
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## 378   0.769095012 -0.0669754648  0.5564238151  0.983349544  0
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## 413  -0.134684699 -0.1028335841 -0.3357190120 -0.396555647  0
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## 419  -0.134684699 -0.0672173408 -0.2731124978 -0.445618943  0
## 420  -0.134684699 -0.1005962310 -0.2965899406 -0.353625264  1
## 421  -0.134684699 -0.1084572015 -0.3513706405 -0.472194895  0
## 422  -0.134684699 -0.1257211021 -0.3670222690 -0.496726543  0
## 423  -0.134684699 -0.1002334169 -0.2652866835 -0.302517664  1
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## 426  -0.084041870  0.0240001516  4.1719500091  2.189488897   1
## 427  -0.134684699 -0.1163484065 -0.3591964548 -0.511036671   0
## 428  -0.134684699 -0.0415180141 -0.0226864410  0.443653292   1
## 429  -0.134684699 -0.1314656575 -0.3826738976 -0.525346798   0
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## 432  -0.134684699 -0.0741712763 -0.2652866835 -0.038802449   0
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## 464  -0.134684699 -0.0458113134 -0.3200673834 -0.500815151   1
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## 477  -0.134684699 -0.0729921307  0.0790491445 -0.271853104   1
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## 485   -0.134684699 -0.0930073710 -0.2026801693  0.525425451   0
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## 505   -0.017816633 33.1718382449 16.8575949451  3.959856150   1
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## 559  -0.134684699 17.6464214915  8.8204836871  1.860355955   1
## 560  -0.134684699 -0.0283357713 -0.2418092407  0.065457054   0
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## 564  -0.134684699 -0.0911630663 -0.3122415691 -0.504903759   0
## 565   0.106842638 -0.0747457318 -0.0931187695  0.310773532   0
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## 571  -0.134684699 -0.1095456435 -0.2887641263 -0.406777167   0
## 572  -0.134684699 -0.0386457365 -0.0148606268  0.625596347   1
## 573  -0.134684699 -0.1072780559 -0.3435448262 -0.511036671   0
## 574   0.153589864 -0.0326593051 -0.1713769122  0.036836798   0
## 575  -0.134684699 -0.1125690937 -0.3200673834 -0.494682239   0
## 576  -0.134684699 -0.0881698507 -0.2026801693  0.590843179   0
## 577  -0.134684699 -0.1254187571 -0.3591964548 -0.437441727   0
## 578  -0.134684699 -0.1047383577  0.0086168160 -0.247321456   0
## 579  -0.134684699  0.0213697499  0.1025265873 -0.325005008   1
## 580   0.753512604 -0.0709966535 -0.2965899406 -0.406777167   1
## 581   1.287210105 -0.1258118056 -0.3044157549 -0.314783488   0
## 582  -0.134684699 -0.1239070320 -0.3748480833 -0.537612622   0
## 583  -0.134684699 -0.0386155020 -0.1635510980 -0.314783488   1
## 584  -0.134684699 -0.0416389521 -0.1244220266 -0.263675888   0
## 585  -0.099624279 -0.0128254718  0.3529526440  2.130204081   1
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## 586  -0.134684699 -0.1174066140 -0.3278931977 -0.374068303   0
## 587  -0.134684699  0.0247257796 -0.1322478409 -0.018359410   1
## 588  -0.134684699 -0.1072780559 -0.3513706405 -0.474239199   0
## 589  -0.134684699 -0.1012311555 -0.2652866835 -0.474239199   1
## 590  -0.134684699  0.0850436110 -0.1478994694 -0.030625233   1
## 591  -0.134684699 -0.0609285644 -0.3044157549 -0.486505023   0
## 592  -0.134684699 -0.1169228620 -0.3513706405 -0.466061983   0
## 593  -0.134684699 -0.1245419565 -0.3435448262 -0.394511343   0
## 594  -0.134684699 -0.1178601316 -0.3591964548 -0.488549327   0
## 595  -0.134684699 -0.1018963145 -0.2965899406 -0.361802479   0
## 596   0.289935941  0.0527229285  0.1338298444  0.394589996   1
## 597   5.330845192 -0.0808531012 -0.2574608692 -0.312739184   0
## 598  -0.134684699 -0.0679732033  0.0868749588 -0.167593601   1
## 599  -0.134684699 -0.1253280536 -0.3513706405 -0.173726513   0
## 600  -0.134684699 -0.1239070320 -0.3748480833 -0.527391102   0
## 601  -0.134684699 -0.0091066280  0.7051142863 -0.114441697   1
## 602  -0.134684699 -0.0749876078 -0.0461638839 -0.190080944   1
## 603  -0.134684699 -0.1177391936 -0.3513706405 -0.482416415   0
## 604  -0.134684699 -0.1185252906 -0.3591964548 -0.486505023   0
## 605  -0.134684699 -0.0516768068  0.0868749588  0.092033006   1
## 606  -0.134684699 -0.1023195976 -0.2965899406 -0.322960704   0
## 607  -0.134684699 -0.1198556087 -0.3591964548 -0.511036671   0
## 608  -0.134684699  0.0060710919  0.1651331015  0.609241915   1
## 609  -0.134684699 -0.0349571272 -0.0148606268  0.609241915   1
## 610  -0.134684699 -0.1094851745 -0.3513706405 -0.431308815   0
## 611  -0.134684699 -0.0863557805 -0.2965899406 -0.196213856   1
## 612  -0.134684699 -0.1061291448 -0.2887641263  0.406855820   1
## 613  -0.134684699 -0.1252978191 -0.3435448262 -0.427220207   1
## 614  -0.134684699 -0.1072780559 -0.3200673834 -0.474239199   0
## 615  -0.134684699 -0.0392806610 -0.0148606268  0.627640651   1
## 616  -0.134684699 -0.0330523536 -0.1244220266 -0.138973345   0
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## 618   0.839215852 -0.0241029410 -0.1400736551 -0.277986016   1
## 619  -0.134684699 -0.0887443062 -0.2652866835 -0.261631584   1
## 620  -0.134684699 -0.1314656575 -0.3826738976 -0.539656926   0
## 621  -0.134684699 -0.0945190961 -0.3513706405 -0.506948063   0
## 622  -0.134684699 -0.1177391936 -0.3200673834 -0.482416415   0
## 623  -0.134684699 -0.1045569507 -0.3044157549 -0.265720192   0
## 624   0.235397511 -0.0358339278  0.2668686870  0.907710297   1
## 625  -0.134684699 -0.0105276496  0.3529526440 -0.200302464   1
## 626  -0.134684699  0.1427008063  0.6346819579  0.049102622   1
## 627  -0.134684699 -0.1012311555 -0.3591964548 -0.515125279   0
## 628  -0.134684699  0.3825208758  1.1746631427  0.224912765   0
## 629  -0.134684699 -0.1046174197 -0.2183317979 -0.339315136   0
## 630  -0.134684699 -0.0858720285 -0.2574608692 -0.255498672   0
## 631  -0.134684699 -0.1199765467 -0.3591964548 -0.488549327   0
## 632  -0.134684699 -0.1125690937 -0.3435448262 -0.521258190   0
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## 634  -0.134684699 -0.0597494188  0.1964363586  0.155406429   0
## 635  -0.064563859 -0.0685778934  0.1025265873  0.308729228   0
## 636  -0.134684699 -0.0044807492  0.0399200731 -0.335226528   0
## 637  -0.134684699 -0.1314656575 -0.3826738976 -0.543745534   0
## 638  -0.134684699 -0.1072780559 -0.3513706405 -0.529435406   0
## 639  -0.134684699 -0.1294097113 -0.3748480833 -0.451751855   0
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## 640   -0.134684699  -0.1039824952  -0.3435448262  -0.504903759    0
## 641   -0.134684699  -0.1314656575  -0.3826738976  -0.541701230    0
## 642   -0.134684699  -0.1062803173  -0.3278931977  -0.502859455    0
## 643   -0.134684699  -0.1283515038  -0.3670222690  -0.482416415    1
## 644   -0.134684699  -0.1093340020  -0.0539896981   0.985393848    1
## 645   -0.134684699  -0.0958191796  -0.2496350550  -0.374068303    1
## 646   -0.134684699  -0.0749271388  -0.2731124978  -0.049023969    0
## 647   -0.134684699  -0.0866883601  -0.3044157549  -0.273897408    1
## 648    0.200337091   1.5476981121   4.5867181656   0.954729289    1
## 649   -0.134684699  -0.1213975683  -0.3670222690  -0.498770847    0
## 650   -0.134684699  -0.1276863447  -0.3748480833  -0.529435406    0
## 651   -0.134684699  -0.0690011764  -0.1087703980  -0.265720192    1
## 652   -0.134684699  -0.1094851745  -0.3513706405  -0.508992367    0
## 653   -0.134684699  -0.1031359291  -0.2731124978  -0.421087295    0
## 654   -0.134684699   0.0499413543   0.4312107868   0.353703916    1
## 655   -0.134684699  -0.1012311555  -0.2809383120  -0.183948033    1
## 656   -0.134684699  -0.1098782231  -0.3591964548  -0.523302494    0
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## 658   -0.068459461  -0.0576632382  -0.1165962123   0.472273548    0
## 659    0.091260229   0.0192533348   0.0633975160   0.320995052    1
## 660   -0.134684699  -0.1072780559  -0.3513706405  -0.529435406    0
## 661    0.383430394   0.0375452085   5.3927770357   4.221527061    1
## 662   -0.134684699  -0.0756225323   0.0790491445  -0.053112577    0
## 663   -0.134684699   0.0357009039   1.7694250274   0.813672313    1
## 664   -0.134684699  -0.1030149911  -0.2965899406  -0.480372111    1
## 665   -0.134684699  -0.1057360963  -0.2887641263  -0.343403744    0
## 666   -0.134684699  -0.0966959802  -0.3044157549  -0.459929071    0
## 667    0.044513003  -0.0065064609   0.6425077721   1.498514149    1
## 668   -0.134684699  -0.0947307376  -0.2183317979  -0.316827792    0
## 669   -0.134684699  -0.1072780559  -0.2965899406  -0.419042991    1
## 670   -0.134684699  -0.0751690148  -0.0226864410  -0.378156911    0
## 671   -0.134684699  -0.0996589614  -0.2261576121  -0.468106287    0
## 672    0.056199809  -0.0469904590   0.1494814729   0.887267257    1
## 673   -0.134684699  -0.1113294792  -0.3670222690  -0.537612622    0
## 674    0.044513003  -0.0099229596   0.6425077721   1.453539462    1
## 675   -0.134684699  -0.0592959013  -0.2731124978  -0.333182224    0
## 676    0.180859080   0.2966548902   0.7677208005   0.226957069    1
## 677    0.173067875   0.3443951688   0.7598949862   0.239222893    1
## 678    0.188650284   0.0285957959   0.6425077721   1.420830598    1
## 679   -0.064563859   0.1317256821   0.7677208005   2.547242095    1
## 680   -0.134684699  -0.0995682579  -0.2183317979  -0.320916400    1
## 681   -0.134684699  -0.1083967325  -0.3200673834  -0.410865775    0
## 682   -0.134684699  -0.0654032707  -0.1400736551   0.435476076    0
## 683    0.017243787  -0.0510721168   0.1573072872   0.132919086    0
## 684    0.788573023  -0.0983588778  -0.3357190120  -0.457884767    1
## 685   -0.134684699  -0.0898932173  -0.2652866835  -0.275941712    1
## 686   -0.134684699  -0.1111783066  -0.2887641263  -0.329093616    0
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## 688   -0.134684699  -0.1314656575  -0.3826738976  -0.533524014    0
## 689   -0.134684699  -0.0963936352  -0.3044157549  -0.437441727    0
## 690   -0.134684699  -0.0996589614  -0.2261576121  -0.468106287    0
## 691   -0.134684699  -0.0934911230  -0.2261576121   0.116564654    1
## 692   -0.134684699  -0.0764993329  -0.2418092407  -0.421087295    1
## 693   -0.134684699  -0.0800367696  -0.2339834264  -0.177815121    0
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## 694  -0.134684699 -0.0256449006 -0.1948543550 -0.437441727   1
## 695  -0.134684699 -0.0293032754  1.2372696569  0.490672283   0
## 696  -0.134684699 -0.1185252906 -0.3513706405 -0.384289823   0
## 697  -0.134684699 -0.1093642365 -0.2652866835 -0.310694880   0
## 698  -0.134684699 -0.1094851745 -0.3513706405 -0.431308815   0
## 699  -0.134684699 -0.0754108908  0.1416556587 -0.226878416   0
## 700  -0.134684699 -0.1123574522 -0.3044157549  0.079767182   0
## 701  -0.134684699 -0.1096968160 -0.3044157549 -0.459929071   0
## 702   0.071782218 -0.0953354276  0.0007910018 -0.134884737   1
## 703  -0.134684699 -0.0629542760 -0.1478994694 -0.147150561   0
## 704  -0.134684699 -0.0508604752  0.2512170585 -0.210523984   1
## 705  -0.134684699  0.2363672933 -0.1713769122 -0.386334127   1
## 706  -0.134684699 -0.1175275521 -0.3591964548 -0.470150591   0
## 707  -0.134684699 -0.1314656575 -0.3826738976 -0.508992367   1
## 708  -0.134684699 -0.1099689266 -0.2731124978 -0.390422735   0
## 709  -0.134684699 -0.0883512577  0.2042621729 -0.141017649   0
## 710   1.170342039  0.0859808806  2.1607157410  2.232419281   1
## 711  -0.134684699 -0.1314656575 -0.3826738976 -0.515125279   0
## 712  -0.134684699 -0.0453275614  0.5564238151  0.026615278   1
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## 715  -0.134684699 -0.0270356877  0.0399200731  1.355412870   0
## 716  -0.134684699 -0.0609285644 -0.3044157549 -0.486505023   0
## 717  -0.134684699 -0.0174513506 -0.1870285408 -0.206435376   0
## 718  -0.134684699  0.0442875024  3.4754525388  2.432761072   1
## 719  -0.134684699 -0.1314656575 -0.3826738976 -0.537612622   0
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## 721  -0.134684699 -0.1128109697 -0.3044157549 -0.435397423   0
## 722  -0.134684699 -0.1169228620 -0.3513706405 -0.466061983   0
## 723  -0.134684699 -0.1059779723 -0.3044157549 -0.306606272   0
## 724  -0.134684699 -0.0824857643 -0.3044157549 -0.392467039   0
## 725   0.200337091  1.5476981121  4.5867181656  0.954729289   1
## 726  -0.134684699 -0.1092432985 -0.3122415691 -0.427220207   0
## 727  -0.134684699 -0.1012311555 -0.2809383120 -0.183948033   1
## 728  -0.134684699 -0.0981774708 -0.3044157549 -0.251410064   1
## 729   1.228776072  0.0883694063  0.1494814729  1.261374887   1
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## 731  -0.134684699 -0.1220324928 -0.3670222690 -0.504903759   1
## 732  -0.134684699 -0.1226371829 -0.3591964548 -0.376112607   0
## 733  -0.134684699 -0.0263705287 -0.2339834264 -0.355669567   1
## 734  -0.134684699 -0.0079274825 -0.1322478409 -0.308650576   1
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## 748   -0.134684699  -0.0395225370   0.0320942589  -0.151239169   1
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## 773   -0.134684699  -0.1094851745  -0.3513706405  -0.431308815   0
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## 775   -0.134684699  -0.0268240462  -0.1713769122   0.045014014   0
## 776    0.293831544  -0.0540653325   0.0320942589   1.453539462   1
## 777   -0.134684699  -0.1314656575  -0.3826738976  -0.543745534   0
## 778   -0.134684699  -0.0950633171  -0.3200673834  -0.128751825   0
## 779   -0.134684699  -0.0709966535  -0.2574608692  -0.443574639   0
## 780    0.106842638  -0.0732340067  -0.0148606268   0.104298830   0
## 781   -0.134684699  -0.1022288941  -0.2496350550  -0.302517664   0
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## 784   -0.134684699  -0.1314656575  -0.3826738976  -0.535568318   0
## 785   -0.134684699  -0.1242698460  -0.3591964548  -0.494682239   0
## 786   -0.134684699  -0.0619867720  -0.2652866835   0.038881102   1
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## 792    0.009452583  -0.1074594629  -0.3122415691  -0.173726513   0
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## 795   -0.134684699  -0.0654637397   0.0399200731  -0.157372081   0
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## 798   -0.134684699  -0.1161669995  -0.3044157549  -0.316827792   0
## 799   -0.134684699  -0.1249954740  -0.3670222690  -0.478327807   0
## 800   -0.134684699  -0.0558794026  -0.2261576121  -0.461973375   0
## 801   -0.134684699  -0.0901350933  -0.2965899406  -0.126707521   0
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## 805  -0.134684699 -0.0926747914 -0.2183317979 -0.300473360   1
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## 808   0.060095411 -0.1003241204 -0.1400736551 -0.008137890   1
## 809  -0.134684699 -0.0379503429  0.2903461299 -0.012226498   0
## 810  -0.134684699 -0.1141110533 -0.3591964548 -0.396555647   0
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## 813  -0.134684699 -0.1046174197 -0.3513706405 -0.513080975   0
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## 819  -0.134684699 -0.1097572851 -0.2965899406 -0.298429056   0
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## 1014 -0.134684699 -0.0445414643 -0.3044157549 -0.484460719   1
## 1015 -0.134684699 -0.0256449006 -0.1870285408 -0.455840463   1
## 1016 -0.134684699 -0.1314656575 -0.3826738976 -0.529435406   0
## 1017 -0.134684699 -0.1150785574 -0.2731124978 -0.327049312   0
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## 1019 -0.134684699 -0.1314656575 -0.3826738976 -0.543745534   0
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## 1021 -0.134684699  0.1795868986  1.1198824428  1.529178709   1
## 1022  0.025034992 -0.0927352605 -0.2026801693 -0.249365760   0
## 1023 -0.134684699  0.0153833185 -0.2496350550 -0.464017679   0
## 1024 -0.134684699 -0.0903467348 -0.2418092407 -0.253454368   1
## 1025 -0.134684699 -0.1149878539 -0.3513706405 -0.513080975   0
## 1026 -0.134684699 -0.0609285644  0.0086168160 -0.363846783   0
## 1027 -0.134684699 -0.0992961474 -0.2105059836  0.110431742   0
## 1028 -0.134684699 -0.0374061219 -0.2339834264 -0.093998657   1
## 1029 -0.134684699 -0.1189485736 -0.2887641263 -0.310694880   0
## 1030 -0.134684699 -0.1020172526 -0.2652866835 -0.390422735   0
## 1031 -0.134684699 -0.0921608049 -0.3200673834 -0.500815151   1
## 1032 -0.134684699 -0.1106038511 -0.3044157549 -0.402688559   1
## 1033 -0.134684699 -0.1012311555 -0.3278931977 -0.474239199   0
## 1034 -0.134684699 -0.0753201873 -0.3044157549 -0.466061983   1
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## 1043 -0.134684699 -0.0930980745 -0.1322478409 -0.306606272   1
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## 1048  1.224880470 -0.0609285644 -0.3122415691 -0.486505023   1
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## 1065 -0.134684699 -0.0765598019 -0.1400736551  0.735988762   0
## 1066 -0.134684699 -0.0988728643 -0.0226864410 -0.331137920   0
## 1067 -0.134684699 -0.0017898786  0.0164426303  1.733609108   1
## 1068 -0.134684699 -0.0962122282 -0.3513706405 -0.521258190   0
## 1069 -0.076250666  0.0968048323  4.8449700366  2.214020545   1
## 1070  0.145798660 -0.0882907887 -0.1713769122 -0.235055632   1
## 1071 -0.134684699 -0.1087897810 -0.3435448262 -0.447663247   0
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## 1073 -0.134684699 -0.1259932126 -0.3670222690 -0.521258190   0
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## 1075 -0.134684699 -0.1015939695 -0.2026801693 -0.181903729   0
## 1076 -0.134684699 -0.1314656575 -0.3826738976 -0.513080975   0
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## 1078 -0.134684699 -0.0963936352 -0.3044157549 -0.437441727   0
## 1079 -0.134684699 -0.0593866048 -0.1009445838 -0.277986016   1
## 1080 -0.134684699 -0.1223953069 -0.3670222690 -0.521258190   0
## 1081 -0.134684699 -0.0717222816 -0.2026801693 -0.286163232   0
## 1082 -0.134684699  0.3810696197  1.1746631427  0.222868461   0
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## 1089 -0.134684699 -0.1185252906 -0.2339834264 -0.302517664   1
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## 1126 -0.134684699 13.2422522954  9.9787041994  2.171090161   1
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## 1178 -0.134684699 -0.1012311555 -0.3357190120 -0.523302494   0
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## 1470 -0.134684699 -0.1185252906 -0.3591964548 -0.527391102   0
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## 1485 -0.134684699 -0.1093037675 -0.2965899406  0.355748220   1
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## 1696 -0.134684699 -0.0094089731 -0.2105059836 -0.269808800   1
## 1697 -0.134684699 -0.0729921307  0.1103524016  0.633773563   1
## 1698 -0.134684699 -0.1314656575 -0.3826738976 -0.533524014   0
## 1699 -0.134684699 -0.0949423791 -0.2887641263 -0.331137920   0
## 1700 -0.134684699 -0.0746852628  0.2668686870  0.423210252   1
## 1701 -0.134684699 -0.0313289870 -0.1322478409 -0.265720192   0
## 1702 -0.134684699 -0.0902560313 -0.3513706405 -0.441530335   0
## 1703 -0.134684699 -0.0953958966 -0.2496350550 -0.269808800   0
## 1704 -0.134684699 -0.1072780559 -0.3513706405 -0.529435406   0
## 1705 -0.134684699 -0.0263705287 -0.2339834264 -0.355669567   1
## 1706 -0.134684699 -0.0917072874 -0.2965899406 -0.277986016   1
## 1707 -0.134684699  0.3397995245  0.8146756861 18.034889105   1
## 1708 -0.134684699 -0.1002938859 -0.2183317979  1.437185030   0
## 1709 -0.134684699 -0.0678824998  0.0086168160 -0.363846783   0
## 1710 -0.134684699 -0.1213975683 -0.3748480833 -0.539656926   0
## 1711 -0.134684699 -0.1314656575 -0.3826738976 -0.537612622   0
## 1712 -0.134684699 -0.1025917081 -0.2887641263 -0.275941712   0
## 1713 -0.134684699 -0.1054942203 -0.2496350550 -0.331137920   0
## 1714 -0.134684699 -0.1201277192 -0.3670222690 -0.525346798   1
## 1715 -0.134684699 -0.1087897810 -0.3670222690 -0.504903759   0
## 1716 -0.134684699  0.0163205881 -0.1635510980 -0.439486031   0
## 1717 -0.068459461 -0.0128557063  0.4155591582  1.555754661   1
## 1718 -0.033399041  0.0394197476  0.2042621729  0.744165978   1
## 1719 -0.134684699 -0.0155768115 -0.1635510980 -0.369979695   1
```

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```
## 1720 -0.134684699 -0.1082153255 -0.3435448262 -0.500815151    0
## 1721 -0.029503439 -0.0132185203  0.5407721866  2.062742050    1
## 1722 -0.134684699 -0.1070966489 -0.3044157549 -0.433353119    0
## 1723 -0.134684699 -0.1149273849 -0.3044157549 -0.316827792    0
## 1724 -0.134684699 -0.0519186828 -0.2574608692 -0.406777167    0
##  [ reached 'max' / getOption("max.print") -- omitted 1343 rows ]
```

Standardizing Test Data

```
test_Standardized = data.frame(scale(test))
test_Standardized$V58 = test$V58
head(test_Standardized)
```

```
##            V1         V2          V3          V4         V5          V6
## 1   0.07485039 -0.0576849 -0.10401124 -0.04742051  1.5562245  0.06394306
## 2  -0.34689615 -0.1614636  0.05786903 -0.04742051  0.4979197  1.73408373
## 3  -0.34689615 -0.1614636 -0.58965203 -0.04742051 -0.4696733 -0.32147402
## 4  -0.34689615 -0.1614636  0.21974929 -0.04742051  0.1350723  0.32088777
## 5   1.44552664  0.2104101 -0.00283607 -0.04742051 -0.2580123 -0.22511975
## 6  -0.34689615 -0.1614636 -0.58965203 -0.04742051 -0.4696733 -0.32147402
##            V7         V8         V9        V10        V11        V12        V13
## 1  -0.3277633  0.03652007 -0.3128101 -0.3994284  1.7735659  0.4143739 -0.3050458
## 2   1.5704487  0.55001036  0.7189188 -0.3994284 -0.3083872 -0.2453752  0.7448832
## 3  -0.3277633 -0.27157410 -0.3128101 -0.3994284 -0.3083872 -0.6437142 -0.3050458
## 4  -0.3277633 -0.27157410 -0.3128101  1.1651426  0.8482534 -0.1457904 -0.3050458
## 5  -0.3277633  0.19056716  1.4282323  0.5610013  1.3687417  0.1654120  1.8276223
## 6  -0.3277633 -0.27157410 -0.3128101 -0.3994284 -0.3083872  0.8874015 -0.3050458
##           V14        V15         V16        V17         V18        V19
## 1  -0.1624653 -0.2128542 -0.006571992  0.2171750 -0.38011509  0.3627604
## 2  -0.1624653 -0.2128542  0.091783474  0.3935947  0.17887501  0.3174647
## 3  -0.1624653 -0.2128542 -0.301638388 -0.3120840 -0.38011509 -0.9564764
## 4  -0.1624653 -0.2128542 -0.055749724  0.5700144 -0.03074628 -0.5035195
## 5   3.9309671 -0.1038937 -0.043455291  0.6361718 -0.32770977  0.7590976
## 6  -0.1624653 -0.2128542 -0.301638388 -0.3120840 -0.38011509  0.0909863
##           V20         V21        V22        V23        V24        V25        V26
## 1  -0.1590293 -0.07702727 -0.1324636 -0.3072921 -0.2285315 -0.3327942 -0.3255686
## 2  -0.1590293  1.97663028 -0.1324636 -0.3072921  0.5495345 -0.3327942 -0.3255686
## 3  -0.1590293 -0.68153131 -0.1324636 -0.3072921 -0.2285315  0.8836259  7.3891039
## 4  -0.1590293 -0.35029622 -0.1324636  0.3076930 -0.2285315 -0.3327942 -0.3255686
## 5  -0.1590293  0.43638711 -0.1324636  1.2609198  1.0844549 -0.3327942 -0.3255686
## 6  -0.1590293 -0.17639780 -0.1324636 -0.3072921  1.2546569 -0.3327942 -0.3255686
##           V27        V28        V29        V30        V31        V32        V33
## 1  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
## 2  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
## 3  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
## 4  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
## 5  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
## 6  -0.2172399 -0.2434616 -0.1648326 -0.2344916 -0.1784777 -0.1414031 -0.2160987
##           V34        V35        V36        V37         V38        V39        V40
## 1  -0.1437275 -0.2215117  2.0786000 -0.3262825 -0.05147839 -0.2160424  0.1232674
## 2  -0.1437275 -0.2215117 -0.2414809 -0.3262825 -0.05147839 -0.2160424 -0.1910567
## 3  -0.1437275 -0.2215117 -0.2414809  4.6722887 -0.05147839 -0.2160424 -0.1910567
## 4  -0.1437275 -0.2215117 -0.2414809 -0.3262825 -0.05147839 -0.2160424  0.3328167
```

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```
## 5 -0.1437275 -0.2215117 -0.2414809 -0.3262825 -0.05147839 -0.2160424 -0.1910567
## 6 -0.1437275 -0.2215117 -0.2414809  1.1119856 -0.05147839 -0.2160424 -0.1910567
##          V41         V42         V43         V44         V45         V46         V47
## 1 -0.1293373 -0.1815671 -0.2201468 -0.1073966 -0.1811794 -0.1994938 -0.05346003
## 2 -0.1293373 -0.1815671 -0.2201468 -0.1073966  0.3562613 -0.1994938 -0.05346003
## 3 -0.1293373 -0.1815671 -0.2201468 -0.1073966 -0.3052042 -0.1994938 -0.05346003
## 4 -0.1293373 -0.1815671 -0.2201468 -0.1073966 -0.3052042 -0.1994938 -0.05346003
## 5 -0.1293373 -0.1815671 -0.2201468 -0.1073966 -0.2741980 -0.1994938 -0.05346003
## 6 -0.1293373  1.5865197 -0.2201468 -0.1073966  0.9660498  2.0354888 -0.05346003
##          V48         V49          V50         V51         V52         V53         V54
## 1 -0.1171922  0.0852166 -0.55177374 -0.1636925 -0.3142514 -0.1271942 -0.1051366
## 2 -0.1171922 -0.1842956  0.08437623 -0.1636925 -0.3669454  0.3411686 -0.1051366
## 3 -0.1171922 -0.1842956 -0.64532520 -0.1636925 -0.3669454 -0.2941757 -0.1051366
## 4 -0.1171922 -0.1842956 -0.50499801 -0.1636925 -0.3669454  0.9357857 -0.1051366
## 5 -0.1171922 -0.1312768 -0.28047449 -0.1636925  0.2024071  1.7829114  0.1556432
## 6 -0.1171922 -0.1842956 -0.18692302 -0.1636925 -0.2409939 -0.2941757 -0.1051366
##           V55         V56          V57 V58
## 1 -0.097670106  0.05930975 -0.07587656   1
## 2 -0.110805982 -0.24996062 -0.22013679   1
## 3 -0.112691934 -0.33037091 -0.38363171   0
## 4 -0.111354224 -0.29944387 -0.16380661   1
## 5 -0.004710206  4.20353264  2.78047594   1
## 6 -0.113547192 -0.27470224 -0.32867544   0
```

A) Visualizing Standardized columns

Training Standardized Spam Data V$58 == 1

```
spamStandTrain = train_Standardized[train_Standardized$V58 == 1,]
hist(spamStandTrain$V53,main="Number of times the Charater $ Appears", xlab="$ Character  Appearance")
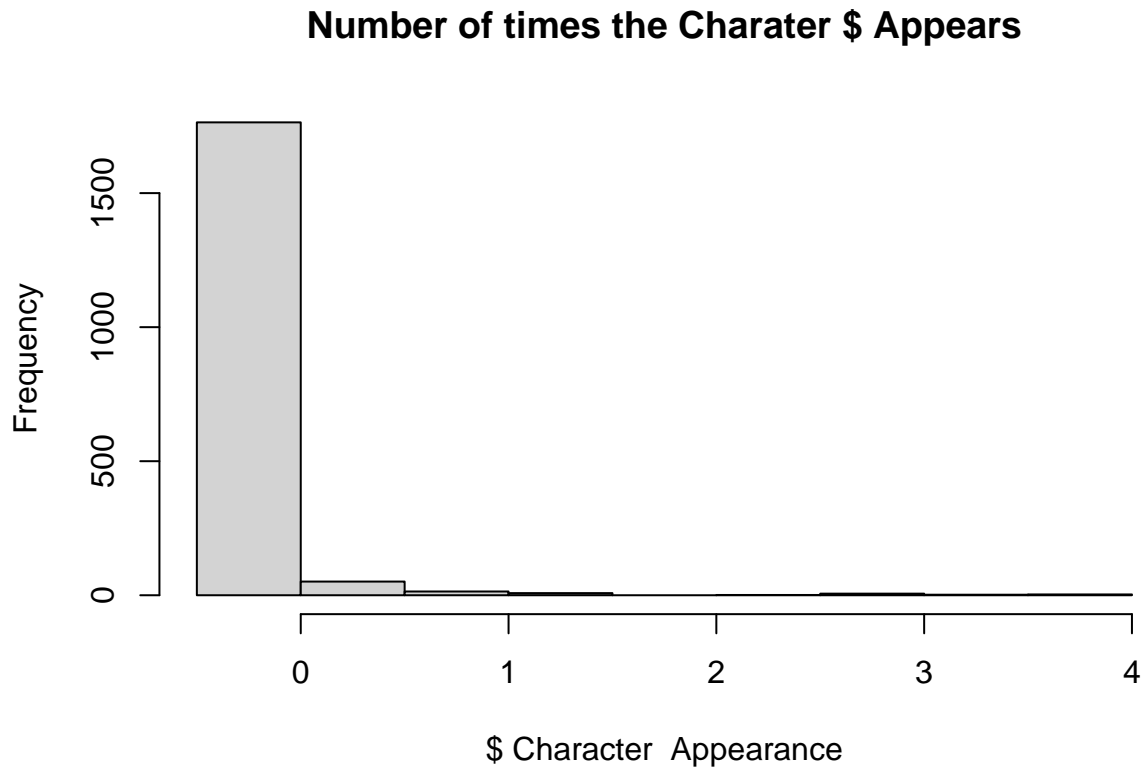```

## Number of times the Charater $ Appears
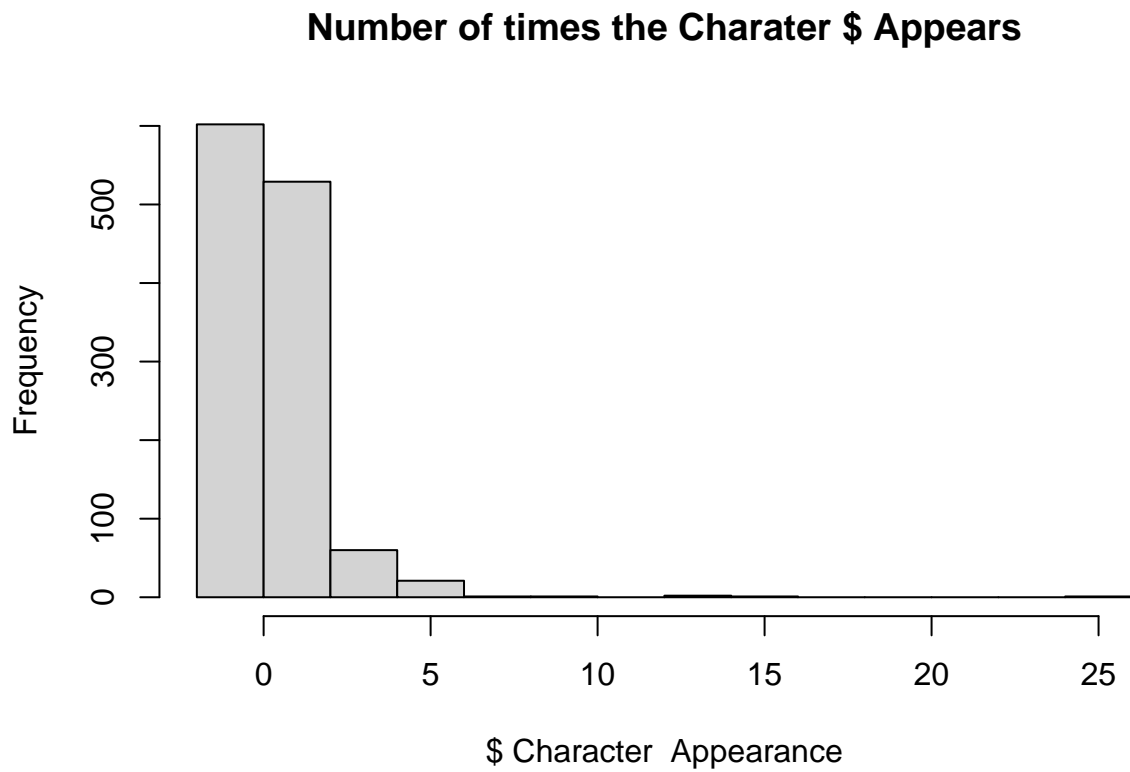


Training Standardized Not Spam Data V$58 == 0

```
NotspamStandTrain = train_Standardized[train_Standardized$V58 == 0,]
hist(NotspamStandTrain$V53,main="Number of times the Charater $ Appears", xlab="$ Character  Appearance"
```

Number of times the Charater $ Appears

Log Transformation

Log Transformation on Train Data

```
train_Log = data.frame(log(train+1))
train_Log$V58 = train$V58
head(train_Log)
```

```
##           V1 V2        V3      V4        V5        V6 V7        V8      V9
## 1 0.00000000  0 0.0000000 0.00000 0.0000000 0.0000000  0 0.0000000 0.00000
## 2 0.00000000  0 0.4637340 0.10436 0.0000000 0.0000000  0 0.0000000 0.10436
## 3 0.05826891  0 0.3364722 0.00000 0.1222176 0.1222176  0 0.1222176 0.00000
## 4 0.00000000  0 0.0000000 0.00000 0.0000000 0.0000000  0 0.0000000 0.00000
## 5 0.00000000  0 0.0000000 0.00000 0.0000000 0.3646431  0 0.0000000 0.00000
## 6 0.00000000  0 0.4252677 0.00000 0.0000000 0.4252677  0 0.0000000 0.00000
##         V10 V11       V12       V13        V14 V15     V16       V17 V18
## 1 0.0000000   0 0.0000000 0.0000000 0.00000000   0 0.00000 0.0000000   0
## 2 0.2070142   0 0.1043600 0.0000000 0.00000000   0 0.10436 0.0000000   0
## 3 0.0000000   0 0.8754687 0.1823216 0.05826891   0 0.00000 0.1823216   0
## 4 0.0000000   0 0.0000000 0.0000000 0.00000000   0 0.00000 0.0000000   0
## 5 0.0000000   0 0.3646431 0.3646431 0.00000000   0 0.00000 0.0000000   0
## 6 0.4252677   0 0.0000000 0.4252677 0.00000000   0 0.00000 0.0000000   0
##          V19 V20       V21 V22 V23 V24       V25      V26       V27     V28 V29
## 1 1.20896035   0 0.0000000   0   0   0 0.7747272 0.000000 0.7747272 1.20896   0
## 2 0.66782937   0 0.3852624   0   0   0 0.2070142 0.000000 0.5364934 0.00000   0
## 3 0.05826891   0 0.0000000   0   0   0 1.2641267 0.000000 0.0000000 0.00000   0
## 4 0.00000000   0 0.0000000   0   0   0 1.2697605 1.269761 1.2697605 0.00000   0
```

```
## 5 0.84156719    0 0.0000000    0    0    0 0.0000000 0.000000 0.6312718 0.00000    0
## 6 1.14740245    0 0.4252677    0    0    0 0.0000000 0.000000 0.0000000 0.00000    0
##   V30 V31 V32       V33     V34       V35        V36        V37 V38 V39 V40 V41
## 1   0   0   0 0.7747272 0.00000 0.7747272 0.00000000 0.00000000   0   0   0   0
## 2   0   0   0 0.0000000 0.10436 0.0000000 0.38526240 0.00000000   0   0   0   0
## 3   0   0   0 0.0000000 0.00000 0.0000000 0.05826891 0.05826891   0   0   0   0
## 4   0   0   0 0.0000000 0.00000 0.0000000 0.00000000 0.00000000   0   0   0   0
## 5   0   0   0 0.0000000 0.00000 0.0000000 0.00000000 0.00000000   0   0   0   0
## 6   0   0   0 0.0000000 0.00000 0.0000000 0.00000000 0.00000000   0   0   0   0
##   V42 V43 V44        V45       V46 V47 V48        V49        V50       V51
## 1   0   0   0 0.00000000 0.0000000   0   0 0.00000000 0.47623418 0.0000000
## 2   0   0   0 0.00000000 0.0000000   0   0 0.20457217 0.27914574 0.1070591
## 3   0   0   0 0.05826891 0.0000000   0   0 0.02761517 0.08157999 0.0000000
## 4   0   0   0 1.26976054 0.0000000   0   0 0.00000000 0.00000000 0.0000000
## 5   0   0   0 0.36464311 0.3646431   0   0 0.00000000 0.13976194 0.0000000
## 6   0   0   0 0.72754861 0.0000000   0   0 0.00000000 0.09621886 0.0000000
##          V52        V53 V54       V55      V56      V57 V58
## 1 0.18481844 0.00000000   0 1.2644092 2.772589 4.127134   0
## 2 0.05448819 0.07232066   0 1.2658202 3.663562 6.400257   0
## 3 0.00000000 0.00000000   0 1.2062702 3.135494 6.501290   0
## 4 0.00000000 0.00000000   0 0.9162907 1.609438 3.218876   0
## 5 0.00000000 0.00000000   0 0.9604990 2.484907 4.276666   0
## 6 0.00000000 0.00000000   0 1.0497721 2.833213 3.970292   0
```

Log Transformation on Test Data

```
test_Log = data.frame(log(test+1))
test_Log$V58 = test$V58
head(test_Log)
```

```
##          V1        V2        V3 V4        V5        V6        V7        V8
## 1 0.1133287 0.1133287 0.2151114  0 0.8501509 0.1133287 0.0000000 0.1133287
## 2 0.0000000 0.0000000 0.2776317  0 0.4946962 0.4946962 0.4946962 0.2776317
## 3 0.0000000 0.0000000 0.0000000  0 0.0000000 0.0000000 0.0000000 0.0000000
## 4 0.0000000 0.0000000 0.3364722  0 0.3364722 0.1823216 0.0000000 0.0000000
## 5 0.4121097 0.3576744 0.2546422  0 0.1310283 0.0295588 0.0000000 0.1655144
## 6 0.0000000 0.0000000 0.0000000  0 0.0000000 0.0000000 0.0000000 0.0000000
##          V9       V10       V11       V12       V13       V14       V15
## 1 0.0000000 0.0000000 0.3074847 0.6151856 0.0000000 0.0000000 0.0000000
## 2 0.2776317 0.0000000 0.0000000 0.2776317 0.2776317 0.0000000 0.0000000
## 3 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 4 0.0000000 0.6981347 0.1823216 0.3364722 0.0000000 0.0000000 0.0000000
## 5 0.4317824 0.4824261 0.2546422 0.5007753 0.5007753 0.7884574 0.0295588
## 6 0.0000000 0.0000000 0.0000000 0.8020016 0.0000000 0.0000000 0.0000000
##          V16       V17       V18       V19 V20       V21 V22       V23       V24
## 1 0.2151114 0.2151114 0.0000000 1.2029723   0 0.5481214   0 0.0000000 0.0000000
## 2 0.2776317 0.2776317 0.2776317 1.1786550   0 1.4374626   0 0.0000000 0.2776317
## 3 0.0000000 0.0000000 0.0000000 0.0000000   0 0.0000000   0 0.0000000 0.0000000
## 4 0.1823216 0.3364722 0.1823216 0.5877867   0 0.3364722   0 0.1823216 0.0000000
## 5 0.1906204 0.3576744 0.0295588 1.3937664   0 0.8544153   0 0.4121097 0.4317824
## 6 0.0000000 0.0000000 0.0000000 1.0473190   0 0.4762342   0 0.0000000 0.4762342
##         V25      V26 V27 V28 V29 V30 V31 V32 V33 V34 V35       V36       V37 V38
## 1 0.000000 0.000000   0   0   0   0   0   0   0   0   0 0.6830968 0.0000000   0
```
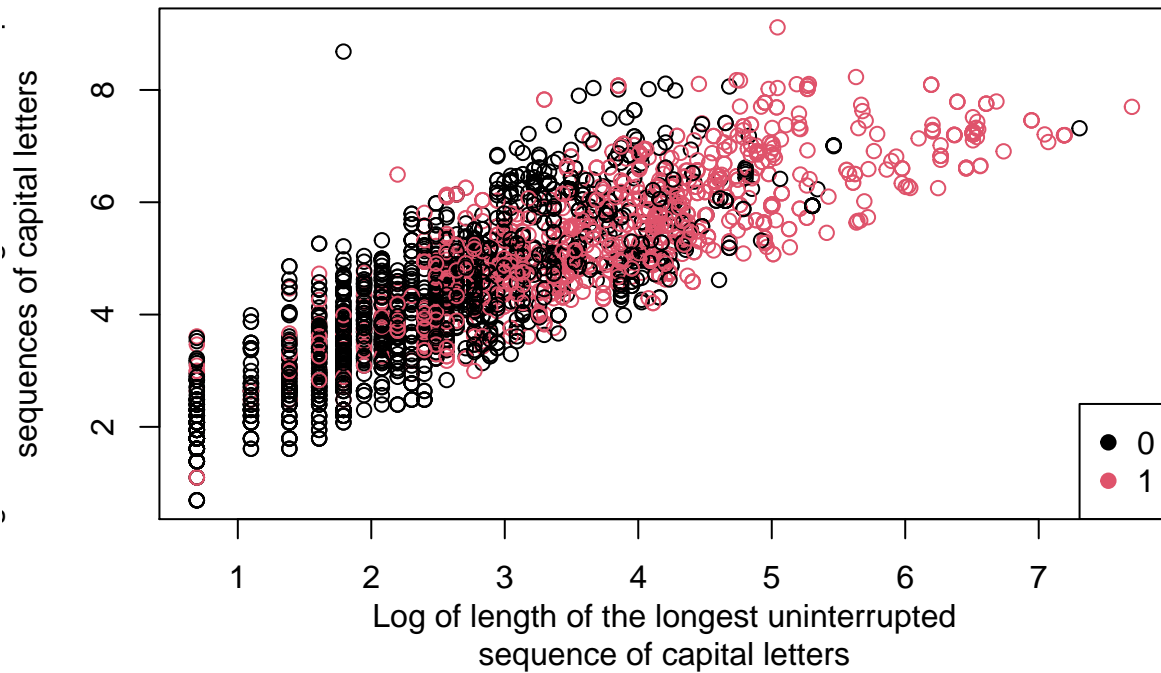
```
## 2 0.000000 0.000000    0    0    0    0    0    0    0    0    0 0.0000000 0.0000000    0
## 3 1.137833 1.998774    0    0    0    0    0    0    0    0    0 0.0000000 1.1378330    0
## 4 0.000000 0.000000    0    0    0    0    0    0    0    0    0 0.0000000 0.0000000    0
## 5 0.000000 0.000000    0    0    0    0    0    0    0    0    0 0.0000000 0.0000000    0
## 6 0.000000 0.000000    0    0    0    0    0    0    0    0    0 0.0000000 0.4762342    0
##    V39       V40 V41       V42 V43 V44       V45      V46 V47 V48       V49
## 1    0 0.1133287   0 0.0000000   0   0 0.1133287 0.000000   0   0 0.05921186
## 2    0 0.0000000   0 0.0000000   0   0 0.4946962 0.000000   0   0 0.00000000
## 3    0 0.0000000   0 0.0000000   0   0 0.0000000 0.000000   0   0 0.00000000
## 4    0 0.1823216   0 0.0000000   0   0 0.0000000 0.000000   0   0 0.00000000
## 5    0 0.0000000   0 0.0000000   0   0 0.0295588 0.000000   0   0 0.01192857
## 6    0 0.0000000   0 0.8020016   0   0 0.8020016 1.047319   0   0 0.00000000
##         V50 V51        V52        V53      V54       V55      V56      V57 V58
## 1 0.01980263   0 0.04018179 0.04018179 0.000000 1.2092588 4.248495 5.541264   1
## 2 0.14496577   0 0.00000000 0.14496577 0.000000 1.0123279 2.995732 5.010635   1
## 3 0.00000000   0 0.00000000 0.00000000 0.000000 0.9805792 1.945910 3.433987   0
## 4 0.02955880   0 0.00000000 0.26390154 0.000000 1.0032021 2.484907 5.252273   1
## 5 0.07510747   0 0.36672428 0.41210965 0.124869 2.0268316 6.606650 7.755339   1
## 6 0.09349034   0 0.09349034 0.00000000 0.000000 0.9658425 2.772589 4.262680   0
```

Visualizing Log Transformation

$0 =$ Not Spam, $1 =$ Spam

```
plot(train_Log$V56, train_Log$V57, col=factor(train_Log$V58),xlab="Log of length of the longest uninter
sequence of capital letters", ylab="Log of sum of the lengths of uninterrupted
sequences of capital letters",main="Log of Longest Capital Letters vs. Sum of number of capital letters"
legend("bottomright",
       legend = levels(factor(train_Log$V58)),
       pch = 19,
       col = factor(levels(factor(train_Log$V58))))
```

Log of Longest Capital Letters vs. Sum of number of capital letters

Discretize Transformation

Discretize Transformation on Train Data

```
train_Discretize = data.frame(train>0)
train_Discretize$V58 = train$V58
train_Discretize = train_Discretize*1
head(train_Discretize)
```

```
##   V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 V21
## 1  0  0  0  0  0  0  0  0  0   0   0   0   0   0   0   0   0   1   0   0
## 2  0  0  1  1  0  0  0  0  1   1   0   1   0   0   0   1   0   0   1   0   1
## 3  1  0  1  0  1  1  0  1  0   0   0   1   1   1   0   0   1   0   1   0   0
## 4  0  0  0  0  0  0  0  0  0   0   0   0   0   0   0   0   0   0   0   0   0
## 5  0  0  0  0  0  1  0  0  0   0   0   1   1   0   0   0   0   0   1   0   0
## 6  0  0  1  0  0  1  0  0  0   1   0   0   1   0   0   0   0   0   1   0   1
##   V22 V23 V24 V25 V26 V27 V28 V29 V30 V31 V32 V33 V34 V35 V36 V37 V38 V39 V40
## 1   0   0   0   1   0   1   1   0   0   0   0   1   0   1   0   0   0   0   0
## 2   0   0   0   1   0   1   0   0   0   0   0   0   1   0   1   0   0   0   0
## 3   0   0   0   1   0   0   0   0   0   0   0   0   0   0   1   1   0   0   0
## 4   0   0   0   1   1   1   0   0   0   0   0   0   0   0   0   0   0   0   0
## 5   0   0   0   0   0   1   0   0   0   0   0   0   0   0   0   0   0   0   0
## 6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
##   V41 V42 V43 V44 V45 V46 V47 V48 V49 V50 V51 V52 V53 V54 V55 V56 V57 V58
```

```
## 1   0   0   0   0   0   0   0   0   0   1   0   1   0   0   1   1   1   0
## 2   0   0   0   0   0   0   0   0   1   1   1   1   1   0   1   1   1   0
## 3   0   0   0   0   1   0   0   0   1   1   0   0   0   0   1   1   1   0
## 4   0   0   0   0   1   0   0   0   0   0   0   0   0   0   1   1   1   0
## 5   0   0   0   0   1   1   0   0   0   1   0   0   0   0   1   1   1   0
## 6   0   0   0   0   1   0   0   0   0   1   0   0   0   0   1   1   1   0
```

Discretize Transformation on Test Data

```
test_Discretize = data.frame(test>0)
test_Discretize$V58 = test$V58
test_Discretize = test_Discretize*1
head(test_Discretize)
```

```
##   V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 V21
## 1  1  1  1  0  1  1  0  1  0   0   1   1   0   0   0   1   1   0   1   0   1
## 2  0  0  1  0  1  1  1  1  1   0   0   1   1   0   0   1   1   1   1   0   1
## 3  0  0  0  0  0  0  0  0  0   0   0   0   0   0   0   0   0   0   0   0   0
## 4  0  0  1  0  1  1  0  0  0   1   1   1   0   0   0   1   1   1   1   0   1
## 5  1  1  1  0  1  1  0  1  1   1   1   1   1   1   1   1   1   1   1   0   1
## 6  0  0  0  0  0  0  0  0  0   0   0   1   0   0   0   0   0   0   1   0   1
##   V22 V23 V24 V25 V26 V27 V28 V29 V30 V31 V32 V33 V34 V35 V36 V37 V38 V39 V40
## 1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1   0   0   0   1
## 2   0   0   1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
## 3   0   0   0   1   1   0   0   0   0   0   0   0   0   0   0   1   0   0   0
## 4   0   1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1
## 5   0   1   1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
## 6   0   0   1   0   0   0   0   0   0   0   0   0   0   0   0   1   0   0   0
##   V41 V42 V43 V44 V45 V46 V47 V48 V49 V50 V51 V52 V53 V54 V55 V56 V57 V58
## 1   0   0   0   0   1   0   0   0   1   1   0   1   1   0   1   1   1   1
## 2   0   0   0   0   1   0   0   0   0   1   0   0   1   0   1   1   1   1
## 3   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1   1   1   0
## 4   0   0   0   0   0   0   0   0   0   1   0   0   1   0   1   1   1   1
## 5   0   0   0   0   1   0   0   0   1   1   0   1   1   1   1   1   1   1
## 6   0   1   0   0   1   1   0   0   0   1   0   1   0   0   1   1   1   0
```

Visualization of Discretized Transformed Data

First five columns are if the words "make", "address", "all", "3d", "our" are present in the email.

```
discLabels = c("make", "address", "all", "3d", "our")
means = c(mean(train_Discretize$V1),mean(train_Discretize$V2),mean(train_Discretize$V3),mean(train_Disc:

barplot(means, main="Ratio of a word being present in all of the training emails",names.arg = discLabel
    xlab="Word")
```

Ratio of a word being present in all of the training emails

Word
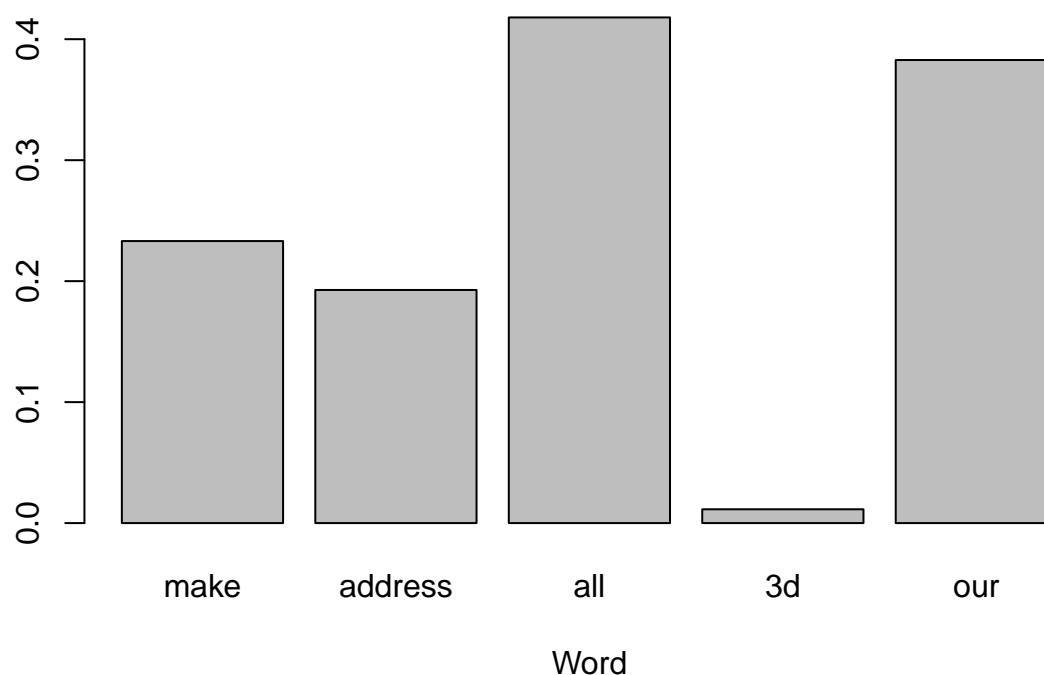
B) Logistic Regression and Significance of Features

Standardized data

```
stan_lr <- glm(V58~., data=train_Standardized)
lr_testPred <- predict(stan_lr, test_Standardized)
lr_testPred <- ifelse(lr_testPred > 0.5, 1, 0)
lr_trainPred <- predict(stan_lr, train_Standardized)
lr_trainPred <- ifelse(lr_trainPred > 0.5, 1, 0)
lr_testError = mean(lr_testPred!=test_Standardized$V58)
lr_trainError = mean(lr_trainPred!=train_Standardized$V58)
lr_testError
```

```
## [1] 0.1043025
```

```
lr_trainError
```

```
## [1] 0.1020541
```

Log transformed data

```r
log_lr <- glm(V58~., data=train_Log)
lr_logTestPred <- predict(log_lr, test_Log)
lr_logTestPred <- ifelse(lr_logTestPred > 0.5, 1, 0)
lr_logTrainPred <- predict(log_lr, train_Log)
lr_logTrainPred <- ifelse(lr_logTrainPred > 0.5, 1, 0)
lr_logTestError = mean(lr_logTestPred!=test_Log$V58)
lr_logTrainError = mean(lr_logTrainPred!=train_Log$V58)
lr_logTestError
```

[1] 0.06584094

```r
lr_logTrainError
```

[1] 0.06097163

Discretized data

```r
dis_lr <- glm(V58~., data=train_Discretize)
lr_disTestPred <- predict(dis_lr, test_Discretize)
```

Warning in predict.lm(object, newdata, se.fit, scale = 1, type = if (type == :
prediction from a rank-deficient fit may be misleading

```r
lr_disTestPred <- ifelse(lr_disTestPred > 0.5, 1, 0)
lr_disTestError = mean(lr_disTestPred!=test_Discretize$V58)

lr_disTrainPred <- predict(dis_lr, train_Discretize)
```

Warning in predict.lm(object, newdata, se.fit, scale = 1, type = if (type == :
prediction from a rank-deficient fit may be misleading

```r
lr_disTrainPred <- ifelse(lr_disTrainPred > 0.5, 1, 0)
lr_disTrainError  = mean (lr_disTrainPred!=train_Discretize$V58)

lr_disTestError
```

[1] 0.08409387

```r
lr_disTrainError
```

[1] 0.07075318

Significance of features we can assess the variables' significance by looking at the t-values from the summary like a multiple testing problems with alpha equals 0.1. The variables that allow us to reject the null hypothesis are the significant variables.

```
stan_tval = coef(summary(stan_lr))[, 't value']
log_tval = coef(summary(log_lr))[, 't value']
dis_tval = coef(summary(dis_lr))[, 't value']

c_val = qt(0.95, df=99)
rej_stan = abs(stan_tval) >= c_val
rej_stanIdx = which(rej_stan==1)

rej_log = abs(log_tval) >= c_val
rej_logIdx = which(rej_log==1)

rej_dis = abs(dis_tval) >= c_val
rej_disIdx = which(rej_dis==1)

rej_stanIdx
```

```
## (Intercept)          V1          V2          V3          V4          V5
##           1           2           3           4           5           6
##          V6          V7          V8         V11         V12         V14
##           7           8           9          12          13          15
##         V16         V17         V18         V19         V20         V21
##          17          18          19          20          21          22
##         V22         V23         V24         V25         V26         V27
##          23          24          25          26          27          28
##         V29         V33         V34         V35         V37         V38
##          30          34          35          36          38          39
##         V42         V44         V45         V46         V47         V48
##          43          45          46          47          48          49
##         V49         V52         V53         V54         V57
##          50          53          54          55          58
```

```
rej_logIdx
```

```
##  V1  V2  V4  V5  V7  V8 V12 V13 V16 V18 V19 V20 V21 V22 V23 V24 V25 V27 V29 V33
##   2   3   5   6   8   9  13  14  17  19  20  21  22  23  24  25  26  28  30  34
## V35 V37 V38 V42 V44 V45 V46 V47 V48 V49 V52 V53 V56 V57
##  36  38  39  43  45  46  47  48  49  50  53  54  57  58
```

```
rej_disIdx
```

```
## (Intercept)          V1          V4          V5          V7          V8
##           1           2           5           6           8           9
##         V10         V11         V12         V13         V14         V15
##          11          12          13          14          15          16
##         V16         V17         V19         V21         V22         V23
##          17          18          20          22          23          24
##         V24         V25         V27         V28         V31         V33
##          25          26          28          29          32          34
##         V34         V35         V37         V42         V44         V45
##          35          36          38          43          45          46
##         V46         V48         V52         V53         V54
##          47          49          53          54          55
```

These variables listed above are statistically significant from both the logistic regression model on standardized data and log transformed data.

C) LDA and QDA

LDA on the standardized data

```
stan_model <- lda(V58~., data=train_Standardized)
stan_predictions <- predict(stan_model, test_Standardized)
stan_trainPred <- predict(stan_model, train_Standardized)
stan_class = stan_predictions$class
stan_true_val = test_Standardized$V58
stan_test_error = mean(stan_class!=stan_true_val)
stan_train_error = mean(stan_trainPred$class!=train_Standardized$V58)
stan_test_error
```

```
## [1] 0.1029987
```

```
stan_train_error
```

```
## [1] 0.1017281
```

LDA on the log transformed data

```
log_model <- lda(V58~., data=train_Log)
log_predictions <- predict(log_model, test_Log)
log_trainPred <- predict(log_model, train_Log)
log_class = log_predictions$class
log_true_val = test_Log$V58
log_test_error = mean(log_class!=log_true_val)
log_train_error = mean(log_trainPred$class!=train_Log$V58)
log_test_error
```

```
## [1] 0.06518905
```

```
log_train_error
```

```
## [1] 0.06031953
```

QDA on the standardized data

```
stan_qda <- qda(V58~., data=train_Standardized)
stan_qdaPred <- predict(stan_qda, test_Standardized)
stan_qdaTrainPred <- predict(stan_qda, train_Standardized)
stan_qdaClass = stan_qdaPred$class
stan_qdaTrue = test_Standardized$V58
stan_qdaTest = mean(stan_qdaClass != stan_qdaTrue)
stan_qdaTrainError = mean(stan_qdaTrainPred$class!=train_Standardized$V58)
stan_qdaTest
```

```
## [1] 0.1747066
```

```
stan_qdaTrainError
```

```
## [1] 0.1786762
```

QDA on the transformed data

```
log_qda = qda(V58~., data=train_Log)
log_qdaPred = predict(log_qda, test_Log)
log_qdaTrainPred = predict(log_qda, train_Log)
log_qdaTest = mean(log_qdaPred$class != test_Log$V58)
log_qdaTrainError = mean(log_qdaTrainPred$class!=train_Log$V58)
log_qdaTest
```

```
## [1] 0.1571056
```

```
log_qdaTrainError
```

```
## [1] 0.1587871
```

Comment:

Part D:

```
library("e1071")
library("ggplot2")
#standard
train_Standardized[,58] <- sapply(train_Standardized[,58], as.factor)
svm_standard_train <- svm(V58 ~., data = train_Standardized, kernel = "linear", cost = .01, scale = FALS
p_standard_train <- predict(svm_standard_train, train_Standardized, type="class")
error_rate_stan_train = mean(p_standard_train != train_Standardized$V58)
error_rate_stan_train
```

```
## [1] 0.07857842
```

```
test_Standardized[,58] <- sapply(test_Standardized[,58], as.factor)
svm_standard_test <- svm(V58 ~., data = test_Standardized, kernel = "linear", cost = .01, scale = FALSE)
p_standard_test <- predict(svm_standard_test, test_Standardized, type="class")
error_rate_stan_test = mean(p_standard_test != test_Standardized$V58)
error_rate_stan_test
```

```
## [1] 0.08148631
```

```
#Discretize Transformation
train_Discretize[,58] <- sapply(train_Discretize[,58], as.factor)
svm_dis_train <- svm(V58 ~., data = train_Discretize, kernel = "linear", cost = .01, scale = FALSE)
p_dis_train <- predict(svm_dis_train, train_Discretize, type="class")
error_rate_dis_train = mean(p_dis_train != train_Discretize$V58)
error_rate_dis_train
```

```
## [1] 0.07368764
```

```r
test_Discretize[,58] <- sapply(test_Discretize[,58], as.factor)
svm_dis_test <- svm(V58 ~., data = test_Discretize, kernel = "linear", cost = .01, scale = FALSE)
p_dis_test <- predict(svm_dis_test, test_Discretize, type="class")
error_rate_dis_test = mean(p_dis_test != test_Discretize$V58)
error_rate_dis_test
```

```
## [1] 0.08670143
```

```r
#log
train_Log[,58] <- sapply(train_Log[,58], as.factor)
svm_log_train <- svm(V58 ~., data = train_Log, kernel = "linear", cost = .01, scale = FALSE)
p_log_train <- predict(svm_log_train, train_Log, type="class")
error_rate_log_train = mean(p_log_train != train_Log$V58)
error_rate_log_train
```

```
## [1] 0.07760026
```

```r
test_Log[,58] <- sapply(test_Log[,58], as.factor)
svm_log_test <- svm(V58 ~., data = test_Log, kernel = "linear", cost = .01, scale = FALSE)
p_log_test <- predict(svm_log_test, test_Log, type="class")
error_rate_log_test = mean(p_log_test != test_Log$V58)
error_rate_log_test
```

```
## [1] 0.0821382
```

```r
#Radial
#standard
train_Standardized[,58] <- sapply(train_Standardized[,58], as.factor)
svm_standard_train <- svm(V58 ~., data = train_Standardized, kernel = "radial", cost = .001, gamma = 1,
p_standard_train <- predict(svm_standard_train, train_Standardized, type="class")
error_rate_stan_train_r = mean(p_standard_train != train_Standardized$V58)
error_rate_stan_train_r
```

```
## [1] 0.3971307
```

```r
test_Standardized[,58] <- sapply(test_Standardized[,58], as.factor)
svm_standard_test <- svm(V58 ~., data = test_Standardized, kernel = "radial", cost = .001, gamma = 1, s
p_standard_test <- predict(svm_standard_test, test_Standardized, type="class")
error_rate_stan_test_r = mean(p_standard_test != test_Standardized$V58)
error_rate_stan_test_r
```

```
## [1] 0.4028683
```

```r
#Discretize Transformation
train_Discretize[,58] <- sapply(train_Discretize[,58], as.factor)
svm_dis_train <- svm(V58 ~., data = train_Discretize, kernel = "radial", cost = .001, gamma = 1, scale =
p_dis_train <- predict(svm_dis_train, train_Discretize, type="class")
error_rate_dis_train_r = mean(p_dis_train != train_Discretize$V58)
error_rate_dis_train_r
```

```
## [1] 0.3971307
```

```
test_Discretize[,58] <- sapply(test_Discretize[,58], as.factor)
svm_dis_test <- svm(V58 ~., data = test_Discretize, kernel = "radial", cost = .001, gamma = 1, scale = 
p_dis_test <- predict(svm_dis_test, test_Discretize, type="class")
error_rate_dis_test_r = mean(p_dis_test != test_Discretize$V58)
error_rate_dis_test_r
```

```
## [1] 0.4028683
```

```
#log
train_Log[,58] <- sapply(train_Log[,58], as.factor)
svm_log_train <- svm(V58 ~., data = train_Log, kernel = "radial", cost = .001, gamma = 1, scale = FALSE
p_log_train <- predict(svm_log_train, train_Log, type="class")
error_rate_log_train_r = mean(p_log_train != train_Log$V58)
error_rate_log_train_r
```

```
## [1] 0.3971307
```

```
test_Log[,58] <- sapply(test_Log[,58], as.factor)
svm_log_test <- svm(V58 ~., data = test_Log, kernel = "radial", cost = .001, gamma = 1, scale = FALSE)
p_log_test <- predict(svm_log_test, test_Log, type="class")
error_rate_log_test_r = mean(p_log_test != test_Log$V58)
error_rate_log_test_r
```

```
## [1] 0.4028683
```

Error Rate Table

Error rates in a table

```
tab <- matrix(c(stan_test_error,stan_qdaTest,log_test_error,
                log_qdaTest,lr_testError,lr_logTestError,
                error_rate_stan_test, error_rate_dis_test,
                error_rate_log_test, error_rate_stan_test_r,
                error_rate_dis_test_r, error_rate_log_test_r,
                stan_train_error,stan_qdaTrainError,
                log_train_error,log_qdaTrainError,
                lr_trainError,lr_logTrainError,
                error_rate_stan_train, error_rate_dis_train,
                error_rate_log_train, error_rate_stan_train_r,
                error_rate_dis_train_r, error_rate_log_train_r), nrow=12, ncol=2)
colnames(tab) <- c('Test Error Rate', 'Train Error Rate')
rownames(tab) <- c('LDA on Standardized Data',
                   'QDA on Standardized Data',
                   'LDA on Log Transformed Data',
                   'QDA on Log Transformed Data',
                   'Logistic Regression on Standardized Data',
                   'Logistic Regression on Log Transformed Data',
                   'SVM Linear on Standardized Data',
```

```
                    'SVM Linear on Discretize Transformed Data',
                    'SVM Linear on Log Transformed Data',
                    'SVM Radial on Standardized Data',
                    'SVM Radial on Discretize Transformed Data',
                    'SVM Radial on Log Transformed Data')
tab <- as.table(tab)
tab
```

```
##                                               Test Error Rate Train Error Rate
## LDA on Standardized Data                          0.10299870       0.10172807
## QDA on Standardized Data                          0.17470665       0.17867623
## LDA on Log Transformed Data                       0.06518905       0.06031953
## QDA on Log Transformed Data                       0.15710561       0.15878709
## Logistic Regression on Standardized Data          0.10430248       0.10205412
## Logistic Regression on Log Transformed Data       0.06584094       0.06097163
## SVM Linear on Standardized Data                   0.08148631       0.07857842
## SVM Linear on Discretize Transformed Data         0.08670143       0.07368764
## SVM Linear on Log Transformed Data                0.08213820       0.07760026
## SVM Radial on Standardized Data                   0.40286832       0.39713075
## SVM Radial on Discretize Transformed Data         0.40286832       0.39713075
## SVM Radial on Log Transformed Data                0.40286832       0.39713075
```

Classifier Design