

Process vcf file for multivariate simulations

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Libraries

```
#libraries_needed <- c("vcfR", "distances", "ggplot2", "fields", "stringr", "vegan", "robust", "mutnorm"
libraries_needed <- c("vcfR", "vegan", "ggplot2", "viridis", "gplots", "corrplot", "RANN",
                      "LEA", "gridExtra")

for (i in 1:length(libraries_needed)){
  library(libraries_needed[i], character.only = TRUE, lib.loc = "/home/lotterhos/R/x86_64-pc-linux-gnu")
  #library(libraries_needed[i], character.only = TRUE, lib.loc = "/home/lotterhos/miniconda3/envs/MVP_en
  library(libraries_needed[i], character.only = TRUE) #laptop
}

## *****
## This is vcfR 1.12.0
##   browseVignettes('vcfR') # Documentation
##   citation('vcfR') # Citation
## *****
## Loading required package: permute
## Loading required package: lattice
## This is vegan 2.5-7
## Loading required package: viridisLite
##
## Attaching package: 'gplots'
## The following object is masked from 'package:stats':
##   lowess
## corrplot 0.92 loaded
##
## Attaching package: 'LEA'
## The following object is masked from 'package:lattice':
##   barchart
```

Load VCF and data files

```
path <- "~/Documents/GitHub/MVP-NonClinalAF/multiphenomultienvi/output_multisim/"
#setwd("/work/lotterhos/MVP-NonClinalAF") #OOD
setwd(path)
seed <- 892657863
vcf_full <- read.vcfR(paste0(path, seed, "_plusneut_MAF01.recode2.vcf.gz"))

## Scanning file to determine attributes.
## File attributes:
##   meta lines: 5
```

```

##   header_line: 6
##   variant count: 29387
##   column count: 8605
## Meta line 5 read in.
## All meta lines processed.
## gt matrix initialized.
## Character matrix gt created.
##   Character matrix gt rows: 29387
##   Character matrix gt cols: 8605
##   skip: 0
##   nrows: 29387
##   row_num: 0
## Processed variant 1000Processed variant 2000Processed variant 3000Processed variant 4000Processed va
## All variants processed
vcf_muts <- read.vcfR(paste0(path,seed,"_VCF_causal.vcf"))

## Scanning file to determine attributes.
## File attributes:
##   meta lines: 13
##   header_line: 14
##   variant count: 354
##   column count: 8605
## Meta line 13 read in.
## All meta lines processed.
## gt matrix initialized.
## Character matrix gt created.
##   Character matrix gt rows: 354
##   Character matrix gt cols: 8605
##   skip: 0
##   nrows: 354
##   row_num: 0
## Processed variant: 354
## All variants processed
indPhen_df <- read.table(paste0(path,seed,"_ind.txt"), header=TRUE)
  indPhen_df$indID <- 1:nrow(indPhen_df)

throughtime <- read.table(paste0(path,seed,"_throughtime.txt"), header=TRUE)

muts_df <- read.table(paste0(path,seed,"_muts.txt"), header=TRUE)

adp_env <- read.table("../bioclim/adaptive_env.txt", header=TRUE)
ext_env <- read.table("../bioclim/extra_env.txt", header=TRUE)
bioclim <- read.table("../bioclim/bioclim.txt", header=TRUE)

ggtheme <- theme_bw() + theme(panel.grid.major = element_blank(), panel.grid.minor = element_blank(),
                               axis.line = element_line(colour="grey20"), axis.title = element_text(co
                               legend.title = element_text(colour="grey20"), legend.text = element_tx

```

Sanity check - orientation of environments

```
tail(throughtime)
```

```
##   sim.generation num_muts num_ind mean.phenotype1.mat mean.phenotype2.MTWetQ
```

```

## 45      9000    361    8624      -0.0185452      -1.78055e-03
## 46      9200    363    8635      -0.0138246      -2.44619e-03
## 47      9400    368    8606      -0.0198771      1.30746e-07
## 48      9600    368    8607      -0.0197691      -6.29428e-03
## 49      9800    337    8492      -0.0225425      -2.50511e-04
## 50     10000    354    8596      -0.0201866      -5.01022e-03
##   mean.phenotype3.MTDQ mean.phenotype4.PDM mean.phenotype5.PwarmQ
## 45      -0.0228846      -0.00234522      0.0214446
## 46      -0.0219562      -0.00200202      0.0157077
## 47      -0.0247648      -0.00611703      0.0216801
## 48      -0.0231567      -0.00783477      0.0147295
## 49      -0.0284869      -0.00389418      0.0264394
## 50      -0.0245633      -0.00207077      0.0168764
##   mean.phenotype6.PWM sd.phenotype1.mat sd.phenotype2.MTWetQ
## 45      -0.002104780      0.300166      0.346964
## 46      -0.003506380      0.302931      0.343768
## 47      -0.000251952      0.302298      0.347386
## 48      -0.005924770      0.299461      0.343905
## 49      0.004707770      0.297080      0.347101
## 50      -0.002050610      0.304379      0.347613
##   sd.phenotype3.MTDQ sd.phenotype4.PDM sd.phenotype5.PwarmQ sd.phenotype6.PWM
## 45      0.299483      0.333457      0.333447      0.318255
## 46      0.304138      0.330964      0.336028      0.321183
## 47      0.305316      0.334049      0.338383      0.321802
## 48      0.303110      0.328418      0.337579      0.321918
## 49      0.304989      0.334200      0.340306      0.322131
## 50      0.302564      0.330399      0.337779      0.322758
##   corr_phen_env_1mat corr_phen_env_2MTWetQ corr_phen_env_3MTDQ
## 45      0.918192      0.968499      0.941545
## 46      0.918878      0.969611      0.946905
## 47      0.922121      0.970056      0.945248
## 48      0.923127      0.969937      0.949468
## 49      0.921609      0.971164      0.947754
## 50      0.920422      0.969746      0.947248
##   corr_phen_env_4PDM corr_phen_env_5PwarmQ corr_phen_env_6PWM
## 45      0.968061      0.976967      0.966933
## 46      0.968431      0.977606      0.967679
## 47      0.968298      0.977212      0.967498
## 48      0.968549      0.977384      0.968107
## 49      0.969287      0.979505      0.967650
## 50      0.968022      0.978508      0.966672

head(indPhen_df)

##           seed ind_index      x      y phenotype1_mat phenotype2_MTWetQ
## 1 892657863      0 0.733354 0.099541      -0.1235820      -0.3066800
## 2 892657863      1 0.728865 0.192011       0.0155480      -0.4308770
## 3 892657863      2 0.370838 0.424631       0.2749810      -0.2833580
## 4 892657863      3 0.267083 0.769019       0.0255684      -0.3017240
## 5 892657863      4 0.642661 0.776228      -0.4432000       0.2311960
## 6 892657863      5 0.959262 0.208790      -0.1882950      -0.0365598
##   phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM env1_mat
## 1      0.7317760      0.4617900      -0.03751700      0.4726730  0.0262576
## 2      0.1004170      0.5377430      -0.00966542      0.5207820 -0.0188616
## 3      0.0250827     -0.1053030      -0.22063000      -0.2879880  0.3562040

```

```

## 4      0.0207409      0.5693000      0.37509700      0.2728360  0.0632020
## 5     -0.4190600      0.0802502      0.23873400     -0.0212566 -0.4083260
## 6      0.0570135      0.1040740     -0.06018340     -0.0418681 -0.2010620
##   env2_MTWetQ  env3_MTDQ  env4_PDM env5_PwarmQ  env6_PWM indID
## 1  -0.3042980  0.6448770  0.4926010  -0.0528437  0.4280540    1
## 2  -0.3263850  0.1203820  0.4793460  -0.0102088  0.4663140    2
## 3  -0.2592700  0.0851666 -0.1477330  -0.2604940 -0.3400270    3
## 4  -0.3094960  0.1726670  0.5262580  0.3720160  0.3132860    4
## 5   0.2325500 -0.3789780 -0.0424752  0.2130940 -0.0580471    5
## 6   0.0714637  0.1606620  0.1026040  -0.0157558  0.0338467    6

cor(indPhen_df$phenotype1_mat, indPhen_df$env1_mat)

## [1] 0.920422

cor(indPhen_df$phenotype2_MTWetQ, indPhen_df$env2_MTWetQ)

## [1] 0.9697462

cor(indPhen_df$phenotype3_MTDQ, indPhen_df$env3_MTDQ)

## [1] 0.9472477

cor(indPhen_df$phenotype4_PDM, indPhen_df$env4_PDM)

## [1] 0.9680222

cor(indPhen_df$phenotype5_PwarmQ, indPhen_df$env5_PwarmQ)

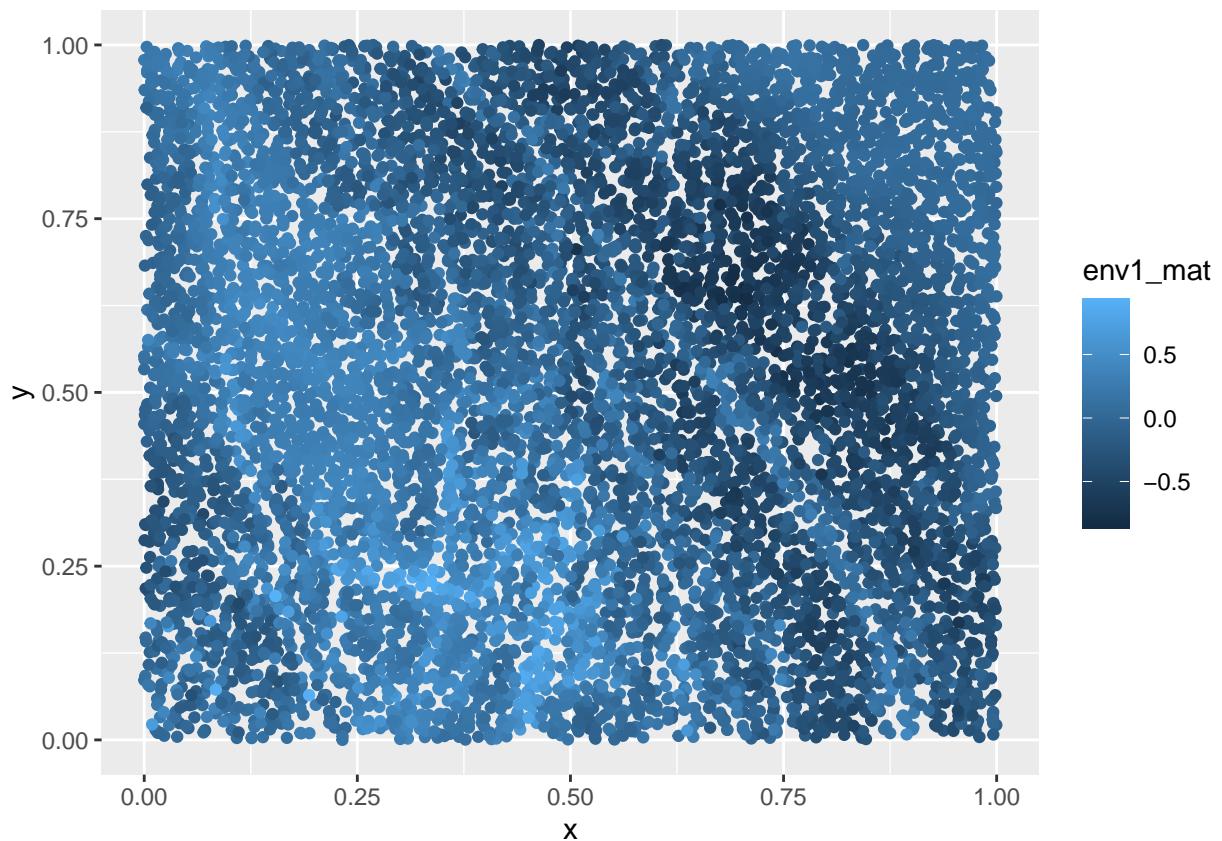
## [1] 0.9785076

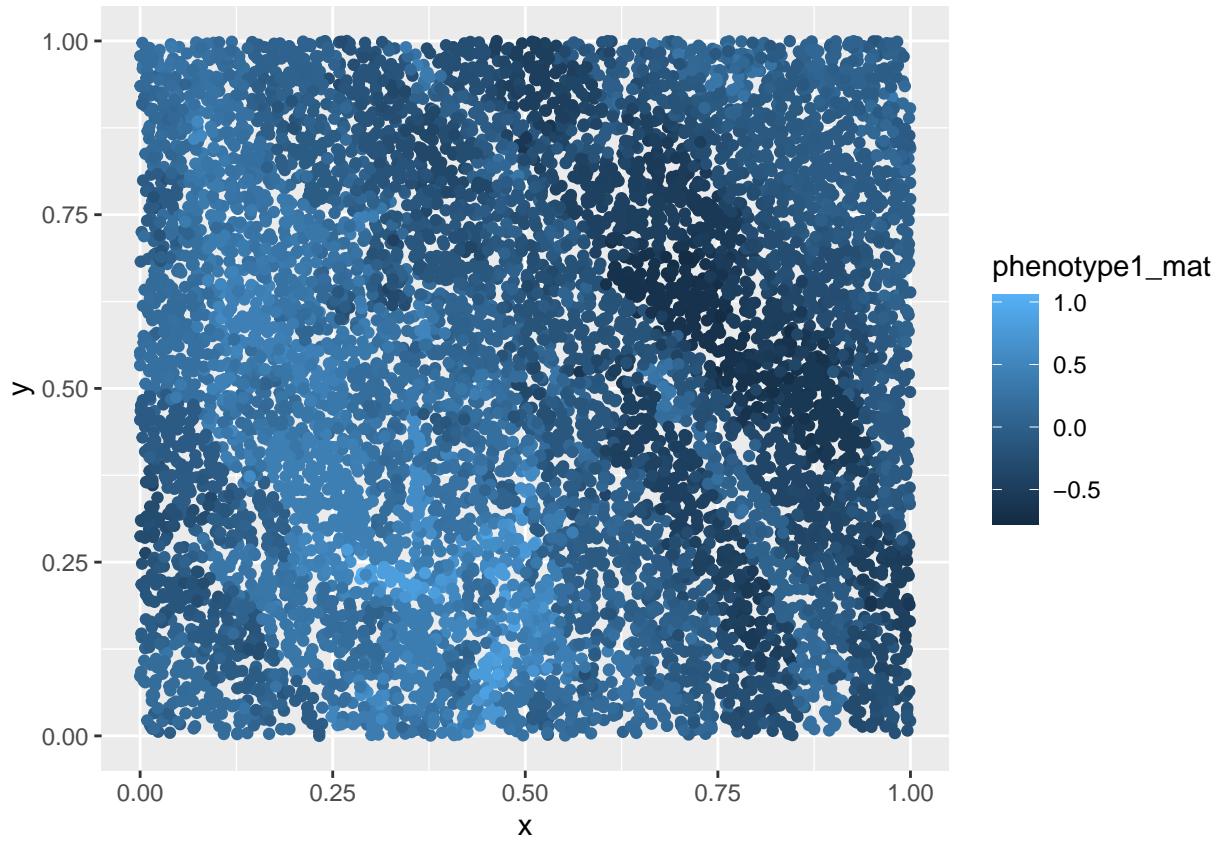
cor(indPhen_df$phenotype6_PWM, indPhen_df$env6_PWM)

## [1] 0.9666724

ggplot(indPhen_df) + geom_point(aes(x, y, color=env1_mat))

```

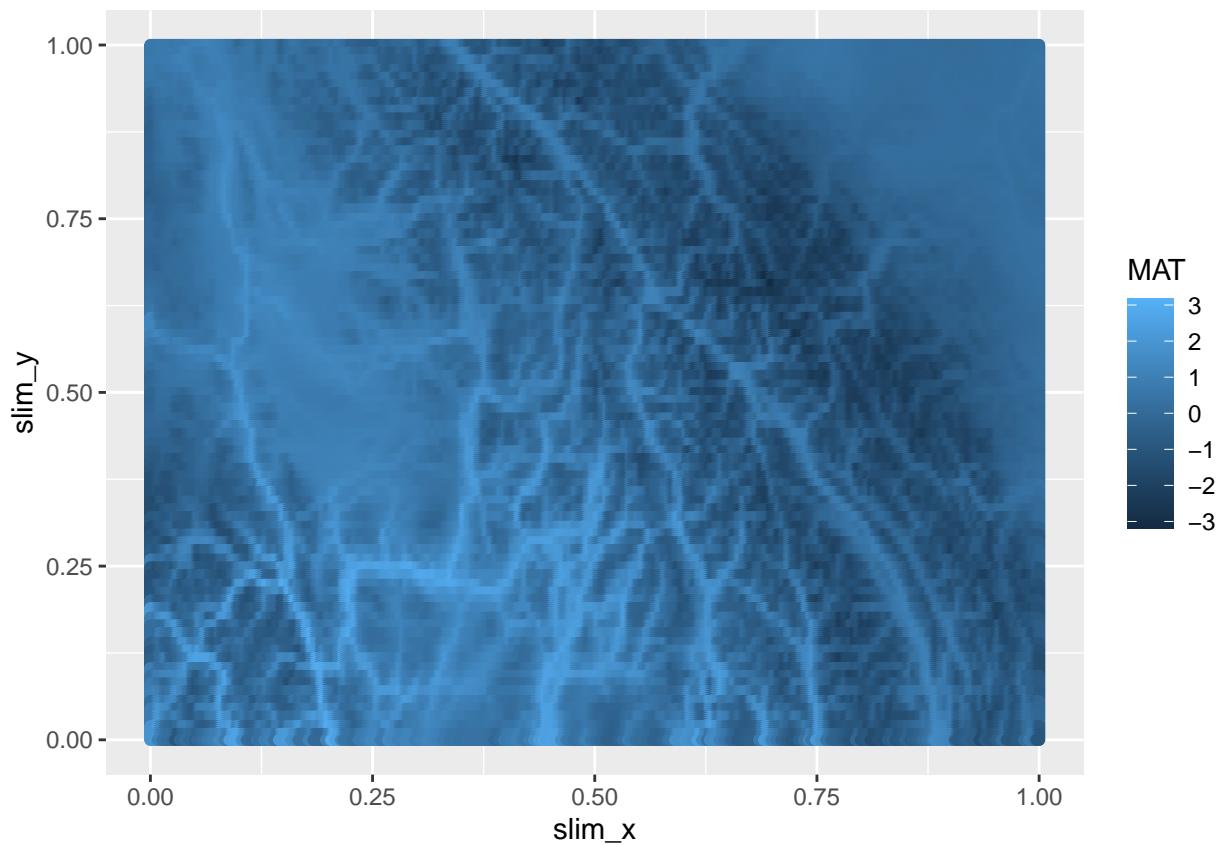




```
head(adp_env)
```

```
##           x      y      MAT    MTWetQ      MTDQ      PWM      PDM
## 360 -123.192 53.408 0.6300150 1.253459 -0.012166195 -1.0131748 -0.9962333
## 720 -123.169 53.408 0.6300150 1.253459 -0.012166195 -1.0131748 -0.9962333
## 1080 -123.145 53.408 0.7095763 1.274450  0.029013211 -1.0131748 -0.9962333
## 1440 -123.122 53.408 0.6697956 1.263954  0.008423508 -1.0131748 -0.9147304
## 1800 -123.099 53.408 0.6697956 1.263954  0.008423508 -1.0131748 -0.9147304
## 2160 -123.075 53.408 0.6697956 1.263954  0.008423508 -0.9718891 -0.9147304
##          PWarmQ      slim_x      slim_y
## 360 -0.4048526 0.000000000      1
## 720 -0.4048526 0.002743648      1
## 1080 -0.3838182 0.005606585      1
## 1440 -0.3627838 0.008350233      1
## 1800 -0.3627838 0.011093880      1
## 2160 -0.3417493 0.013956817      1
```

```
ggplot(adp_env) + geom_point(aes(slim_x, slim_y, color=MAT))
```



Add information to SNPs and individuals

```

geno_full <- vcf_full@gt[,-1]
dim(geno_full)

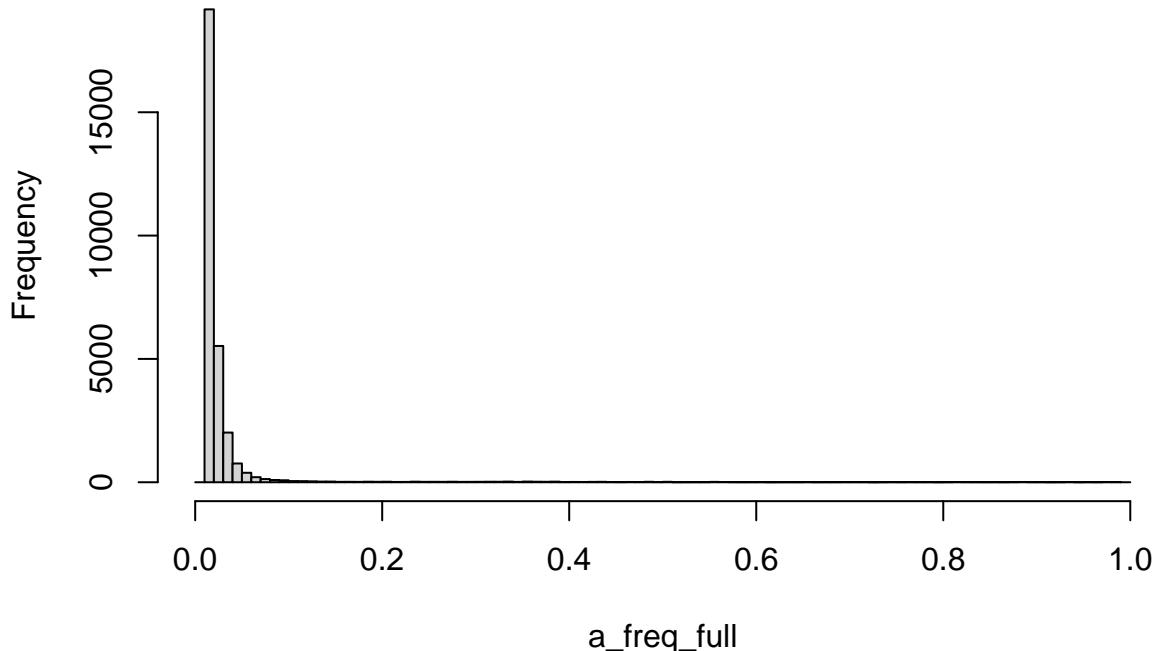
## [1] 29387 8596

position_full <- getPOS(vcf_full)
rown <- vcf_full@fix[, "ALT"] # mutation ID
causal_mut_locs <- which(rown %in% as.character(muts_df$mutID)) # causal mutations
G_full <- matrix(NA, nrow = nrow(geno_full), ncol = ncol(geno_full))
G_full[geno_full %in% c("0/0", "0|0")] <- 0
G_full[geno_full %in% c("0/1", "1/0", "1|0", "0|1")] <- 1
G_full[geno_full %in% c("1/1", "1|1")] <- 2

a_freq_full <- rowSums(G_full)/(2*ncol(G_full))
hist(a_freq_full, breaks=seq(0,1,0.01))

```

Histogram of a_freq_full



```
a_freq_full

if (!identical(sort(unique(unlist(as.numeric(G_full)))), as.numeric(0:2))){
  print("Error: full genotype matrix not uniquely 012")
  break
}
```

Subsampling individuals from landscape

```
indPhen_df$subset <- FALSE
set.seed(9801235)
whichinds <- sort(sample(1:nrow(indPhen_df), size=1000, replace=FALSE))
indPhen_df$subset[whichinds] <- TRUE
sum(indPhen_df$subset) #sanity check

## [1] 1000
G_full_subset <- G_full[,which(indPhen_df$subset)]
```

Assign Linkage groups

```
# Assign loci to LG groups
numLGs <- ceiling(max(as.numeric(vcf_full@fix[, "POS"]))/50000)
for (LG in 1:numLGs){
  sites_low <- (LG-1)*50000+1
  sites_high <- (LG)*50000
  pos <- as.numeric(vcf_full@fix[, "POS"])
  whichlocs <- pos >= sites_low & pos <= sites_high
  vcf_full@fix[whichlocs, "CHROM"] <- as.numeric(LG)
}
table(vcf_full@fix[, "CHROM"])
```

```

##          1   10   11   12   13   14   15   16   17   18   19   2   20   3   4   5
## 1491 1493 1469 1419 1536 1485 1450 1450 1479 1518 1488 1434 1474 1463 1529 1419
##          6   7   8   9
## 1435 1452 1423 1480

# Assign unique names to each locus
head(vcf_full@fix)

##      CHROM POS    ID REF ALT QUAL FILTER INFO
## [1,] "1"   "8"   NA "0" "1" NA   "PASS" NA
## [2,] "1"   "27"  NA "0" "1" NA   "PASS" NA
## [3,] "1"   "34"  NA "0" "1" NA   "PASS" NA
## [4,] "1"   "81"  NA "0" "1" NA   "PASS" NA
## [5,] "1"   "97"  NA "0" "1" NA   "PASS" NA
## [6,] "1"   "153" NA "0" "1" NA   "PASS" NA

vcf_full@fix[, "INFO"] <- paste0(vcf_full@fix[, "CHROM"], "-", vcf_full@fix[, "POS"])
if (sum(duplicated(vcf_full@fix[, "POS"])) > 0){
  dups <- which(duplicated(vcf_full@fix[, "POS"]))
  vcf_full@fix[dups, "INFO"] <- paste0(vcf_full@fix[dups, "INFO"], "_2")
}
b <- 3
while (sum(duplicated(vcf_full@fix[, "INFO"])) > 0){
  dups <- which(duplicated(vcf_full@fix[, "INFO"]))
  vcf_full@fix[dups, "INFO"] <- gsub(paste0("_", b - 1),
                                        paste0("_", b),
                                        x = vcf_full@fix[dups, "INFO"])
  b <- b + 1
  if (b == 10) {print("problem in naming loci"); break}
}

# Check duplicated locus names
if (sum(duplicated(vcf_full@fix[dups, "INFO"])) > 0) {print("Error: duplicate locus names"); break}

head(vcf_full@fix)

##      CHROM POS    ID REF ALT QUAL FILTER INFO
## [1,] "1"   "8"   NA "0" "1" NA   "PASS" "1-8"
## [2,] "1"   "27"  NA "0" "1" NA   "PASS" "1-27"
## [3,] "1"   "34"  NA "0" "1" NA   "PASS" "1-34"
## [4,] "1"   "81"  NA "0" "1" NA   "PASS" "1-81"
## [5,] "1"   "97"  NA "0" "1" NA   "PASS" "1-97"
## [6,] "1"   "153" NA "0" "1" NA   "PASS" "1-153"

rownames(G_full_subset) = vcf_full@fix[, "INFO"]

```

Add individual and locus names to G_full subset

```

colnames(G_full_subset) = indPhen_df$indID[which(indPhen_df$subset)]
head(G_full_subset[, 1:5])

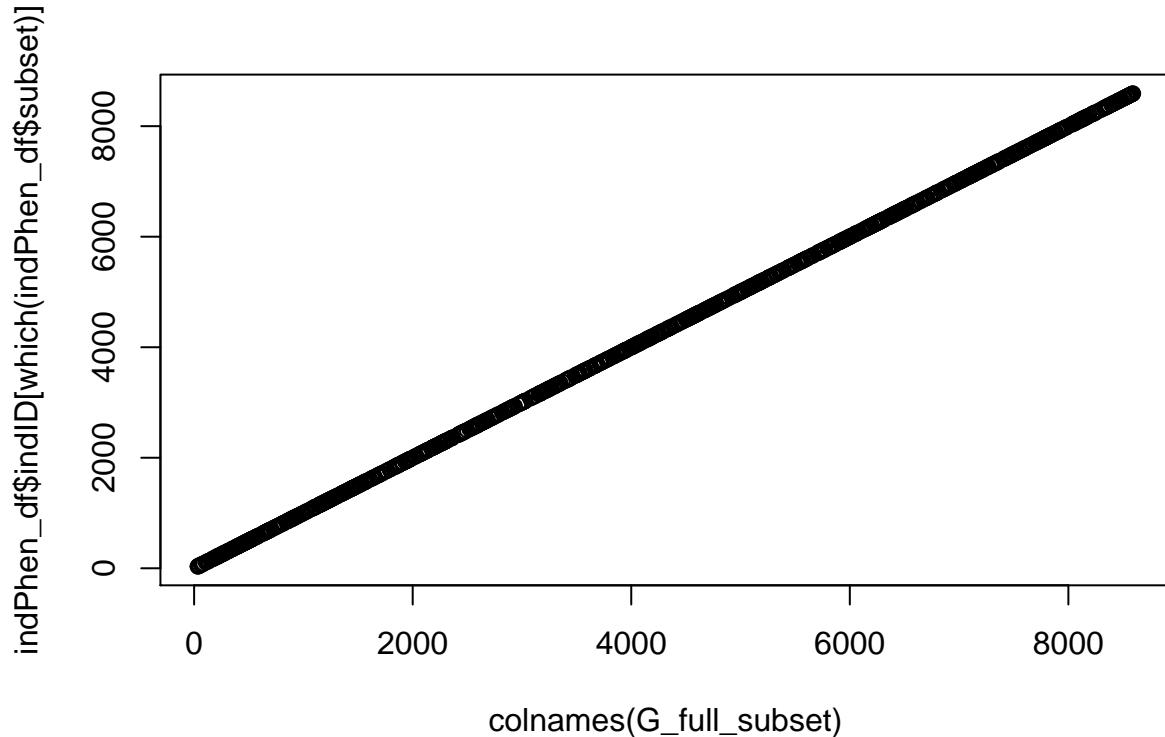
##      34 35 45 46 47
## 1-8    0  0  0  0  0
## 1-27   0  0  0  0  0
## 1-34   0  0  0  0  0

```

```

## 1-81    0 0 0 0 0
## 1-97    0 0 0 0 0
## 1-153   0 0 0 0 0
plot(colnames(G_full_subset), indPhen_df$indID[which(indPhen_df$subset)])

```



```

## Mutation stuff
a_freq_subset <- as.numeric(rowSums(G_full_subset)/(2*ncol(G_full_subset)))
# should have 1000 individuals
#hist(a_freq_subset)

muts_full0 <- data.frame(seed = as.character(seed),
                           VCFrow = 1:nrow(vcf_full@gt),
                           mutID = vcf_full@fix[, "ALT"],
                           LG = as.integer(vcf_full@fix[, "CHROM"]),
                           pos_pyslim = as.integer(vcf_full@fix[, "POS"]),
                           mutname = vcf_full@fix[, "INFO"],
                           a_freq_full = a_freq_full,
                           a_freq_subset = a_freq_subset)

if(!identical(rownames(G_full_subset), muts_full0$mutname)){Print("Error mut names out of order");break}

head(muts_full0)

##          seed VCFrow mutID LG pos_pyslim mutname a_freq_full a_freq_subset
## 1 892657863      1     1     8     1-8  0.01442531  0.0175
## 2 892657863      2     1     27    1-27  0.01384365  0.0120
## 3 892657863      3     1     34    1-34  0.03530712  0.0370
## 4 892657863      4     1     81    1-81  0.03187529  0.0330
## 5 892657863      5     1     97    1-97  0.02030014  0.0170
## 6 892657863      6     1    153   1-153  0.01692648  0.0225

```

```

dim(muts_full0)

## [1] 29387     8

muts_full0$mutID <- as.character(muts_full0$mutID) # all loci, but only causal loci have unique ID
muts_df$mutID <- as.character(muts_df$mutID) #only causal loci, unique ID from SliM

muts_full <- merge(muts_full0, muts_df, by=c("mutID", "seed"), all.x=TRUE)
muts_full <- muts_full[order(muts_full$VCFrow),]
head(muts_full)

##   mutID      seed VCFrow LG pos_pyslim mutname a_freq_full a_freq_subset
## 1     1 892657863     1  1          8  1-8  0.01442531    0.0175
## 2     1 892657863     2  1         27  1-27  0.01384365    0.0120
## 3     1 892657863     3  1         34  1-34  0.03530712    0.0370
## 4     1 892657863     4  1         81  1-81  0.03187529    0.0330
## 5     1 892657863     5  1         97  1-97  0.02030014    0.0170
## 6     1 892657863     6  1        153  1-153 0.01692648    0.0225
##   muttype p mut1.mat.Effect mut2.MTWetQ.Effect mut3_MTDQ.Effect
## 1     <NA> NA             NA                 NA                NA
## 2     <NA> NA             NA                 NA                NA
## 3     <NA> NA             NA                 NA                NA
## 4     <NA> NA             NA                 NA                NA
## 5     <NA> NA             NA                 NA                NA
## 6     <NA> NA             NA                 NA                NA
##   mut4_PDM.Effect mut5_PwarmQ.Effect mut6_PWM.Effect
## 1           NA             NA                 NA                NA
## 2           NA             NA                 NA                NA
## 3           NA             NA                 NA                NA
## 4           NA             NA                 NA                NA
## 5           NA             NA                 NA                NA
## 6           NA             NA                 NA                NA

dim(muts_full)

## [1] 29387     16

if(!identical(rownames(G_full_subset), muts_full$mutname)){Print("Error mut names out of order");break}
# Are there any missing values for LG?
if(sum(is.na(muts_full$LG))>0){Print("Error: Missing LGs"); break}

```

Add effect sizes to muts table

```

head(muts_full)

##   mutID      seed VCFrow LG pos_pyslim mutname a_freq_full a_freq_subset
## 1     1 892657863     1  1          8  1-8  0.01442531    0.0175
## 2     1 892657863     2  1         27  1-27  0.01384365    0.0120
## 3     1 892657863     3  1         34  1-34  0.03530712    0.0370
## 4     1 892657863     4  1         81  1-81  0.03187529    0.0330
## 5     1 892657863     5  1         97  1-97  0.02030014    0.0170
## 6     1 892657863     6  1        153  1-153 0.01692648    0.0225
##   muttype p mut1.mat.Effect mut2.MTWetQ.Effect mut3_MTDQ.Effect
## 1     <NA> NA             NA                 NA                NA
## 2     <NA> NA             NA                 NA                NA
## 3     <NA> NA             NA                 NA                NA

```

```

## 4 <NA> NA NA NA NA
## 5 <NA> NA NA NA NA
## 6 <NA> NA NA NA NA
##   mut4_PDM.Effect mut5_PwarmQ.Effect mut6_PWM.Effect
## 1 NA NA NA
## 2 NA NA NA
## 3 NA NA NA
## 4 NA NA NA
## 5 NA NA NA
## 6 NA NA NA

muts_full$mut1.mat.Effect <- as.numeric(muts_full$mut1.mat.Effect)
muts_full$mut2.MTWetQ.Effect <- as.numeric(muts_full$mut2.MTWetQ.Effect)
muts_full$mut3_MTDQ.Effect <- as.numeric(muts_full$mut3_MTDQ.Effect)
muts_full$mut4_PDM.Effect <- as.numeric(muts_full$mut4_PDM.Effect)
muts_full$mut5_PwarmQ.Effect <- as.numeric(muts_full$mut5_PwarmQ.Effect)
muts_full$mut6_PWM.Effect <- as.numeric(muts_full$mut6_PWM.Effect)
muts_full$causal <- FALSE
muts_full$causal[muts_full$mutID!=1] <- TRUE
sum(muts_full$causal)

## [1] 92

```

FILTER OUT ALLELS WITH MAF < 0.01 AFTER SAMPLING

```

if(!identical(as.character(muts_full$mutname), as.character(rownames(G_full_subset)))){print("Error")}

#muts_full$isMAF01 <- FALSE
rm_loci <- which(muts_full$a_freq_subset < 0.01 | muts_full$a_freq_subset > 0.99)
#muts_full$isMAF01[rm_loci] <- rep(TRUE, length=length(rm_loci))

num_multiallelic <- sum((!complete.cases(G_full_subset)))
rm_loci <- sort(c(rm_loci, which(!complete.cases(G_full_subset)))))

numCausalLowMAFsamp <- sum(muts_full$a_freq_subset < 0.01 & muts_full$causal)

# Filter out MAF loci from G_full_subset

if(length(rm_loci)>0){
  G_full_subset <- G_full_subset[-rm_loci,]
  muts_full <- muts_full[-rm_loci,]
}
if(!identical(as.character(muts_full$mutname), as.character(rownames(G_full_subset)))){print("Error")}

dim(G_full_subset)

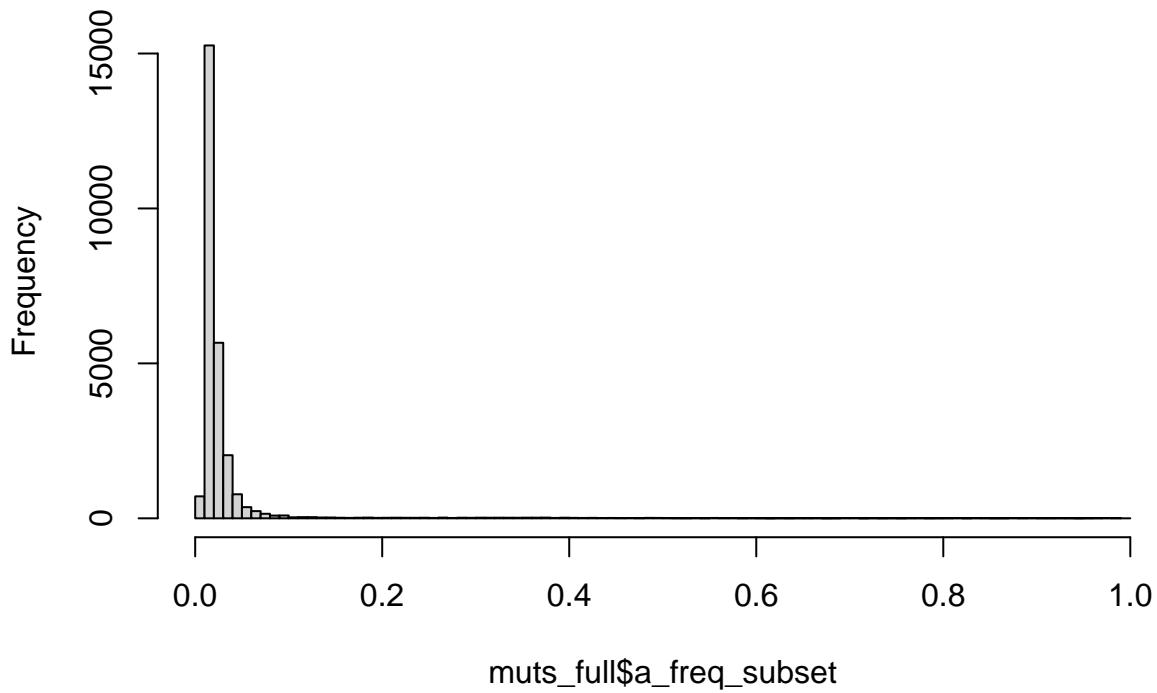
## [1] 26371 1000
head(G_full_subset[,1:10])

##      34 35 45 46 47 65 66 73 86 107
## 1-8    0  0  0  0  0  2  0  0  0  0
## 1-27   0  0  0  0  0  0  0  0  0  0
## 1-34   0  0  0  0  0  0  0  0  0  0
## 1-81   0  0  0  0  0  0  0  0  0  0
## 1-97   0  0  0  0  0  0  0  0  0  0

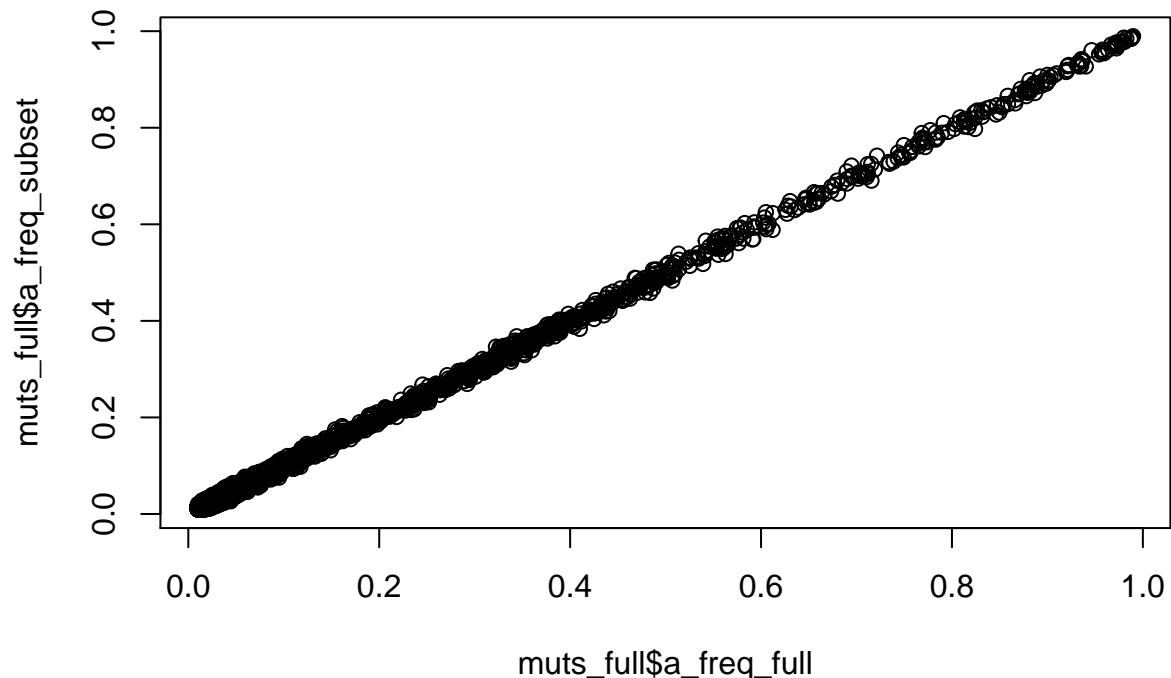
```

```
## 1-153 0 0 0 0 0 0 0 0 0 0  
hist(muts_full$a_freq_subset, breaks=seq(0,1,0.01)) #After MAF
```

Histogram of muts_full\$a_freq_subset



```
plot(muts_full$a_freq_full, muts_full$a_freq_subset) #sanity check
```



Correlation plots

```

plotmain="Mutivariate simulation"
mut_effect_cols <- c("mut1.mat.Effect", "mut2.MTWetQ.Effect",
                      "mut3_MTDQ.Effect", "mut4_PDM.Effect",
                      "mut5_PwarmQ.Effect", "mut6_PWM.Effect")

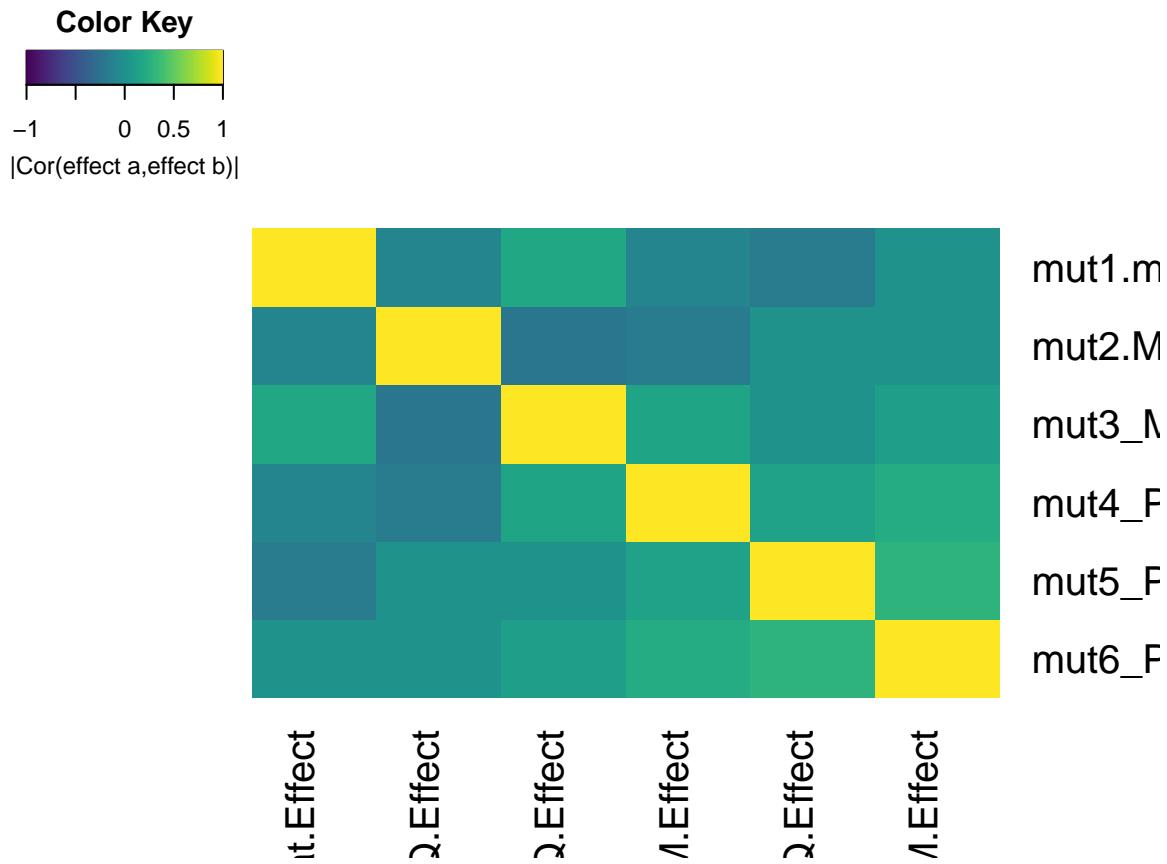
which_mut_effect_cols <- which(colnames(muts_full) %in% mut_effect_cols)

muteffect_cormat <- cor(muts_full[,which_mut_effect_cols], use = "complete.obs")

env_cormat <- cor(adp_env[,c(3,4,5,7,8,6)]) #hard coding

heatmap.2(muteffect_cormat, Rowv = NA, Colv=NA,
          scale="none", col= viridis(100), density.info = "none",
          dendrogram="none",
          trace = "none",
          key.xlab="|Cor(effect a,effect b)|")

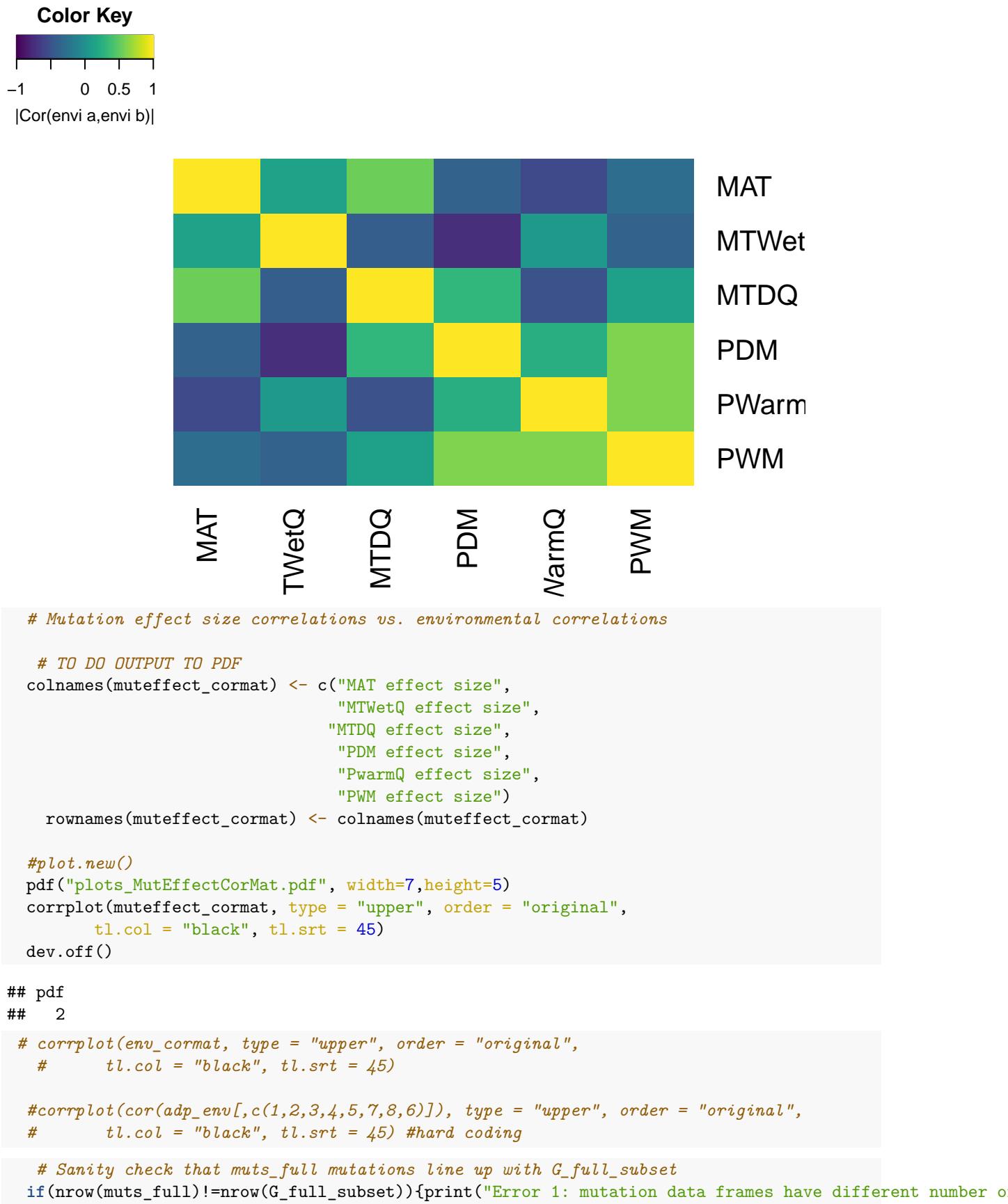
```



```

heatmap.2(env_cormat, Rowv = NA, Colv=NA,
          scale="none", col= viridis(100), dendrogram="none",
          trace = "none", density.info = "none",
          key.xlab="|Cor(envi a,envi b)|")

```



```

num_causal_postfilter <- sum(muts_full$causal)
num_causal_prefilter <- nrow(vcf_muts@fix)
num_neut_postfilter <- sum(!mut_full$causal)
num_neut_prefilter <- sum((vcf_full@fix[, "ALT"]=="1"))

dim(G_full_subset)

## [1] 26371 1000
subset_indPhen_df <- indPhen_df[indPhen_df$subset,]

dim(subset_indPhen_df)

## [1] 1000 18
if(!identical(subset_indPhen_df$indID, sort(subset_indPhen_df$indID))){print("Error individuals in w

```

Do causal SNPs show clinal patterns with environments?

```

dim(G_full_subset[which(muts_full$causal),])

## [1] 90 1000
muts <- G_full_subset[which(muts_full$causal),]

dim(muts)

## [1] 90 1000
mut_freq <- list()

#plot(sort(unique(MAT)), rep(0,18), ylim=c(0,1))

(env_cols <- grep("env", colnames(subset_indPhen_df)))

## [1] 11 12 13 14 15 16

for (env in 1:6){
  print("start")
  ENVI <- round(subset_indPhen_df[,env_cols[env]], 1)
  mut_freq_ENV <- matrix(NA, nrow=nrow(muts), ncol=length(unique(ENVI)))
  colnames(mut_freq_ENV) <- sort(unique(ENVI))
  for (i in 1:nrow(muts)){
    tab <- t(table(ENVI, muts[i,]))
    num <- as.numeric(rownames(tab))
    a <- unlist(colSums(tab*num))/(colSums(tab)*2)
    if(i%%3==0 | i%%4==0){mut_freq_ENV[i,] <- a}else{mut_freq_ENV[i,] <- 1-a}
    #print(i)
  }
  mut_freq[[env]] <- mut_freq_ENV
  print(env)
}

## [1] "start"
## [1] 1
## [1] "start"
## [1] 2

```

```

## [1] "start"
## [1] 3
## [1] "start"
## [1] 4
## [1] "start"
## [1] 5
## [1] "start"
## [1] 6
str(mut_freq)

## List of 6
## $ : num [1:90, 1:18] 1 0 0 0 0 0 1 1 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:18] "-0.8" "-0.7" "-0.6" "-0.5" ...
## $ : num [1:90, 1:12] 1 1 0 0 1 0 1 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:12] "-0.5" "-0.4" "-0.3" "-0.2" ...
## $ : num [1:90, 1:20] 1 0 0 0 1 0 1 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:20] "-0.7" "-0.6" "-0.5" "-0.4" ...
## $ : num [1:90, 1:14] 1 1 0 0 1 0 1 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:14] "-0.6" "-0.5" "-0.4" "-0.3" ...
## $ : num [1:90, 1:16] 1 1 0 0 1 0 1 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:16] "-0.8" "-0.7" "-0.6" "-0.5" ...
## $ : num [1:90, 1:19] 1 1 0 0 1 0 1 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ... $ : NULL
## ... $ : chr [1:19] "-0.7" "-0.6" "-0.5" "-0.4" ...

```

Visualize SNP frequency patterns across environmental clines

```

colnames(subset_indPhen_df[,env_cols])

## [1] "env1_mat"      "env2_MTWetQ"   "env3_MTDQ"     "env4_PDM"      "env5_PwarmQ"
## [6] "env6_PWM"
bioclim

##      BIO    ABBRV                               DESC
## 1    BIO1    MAT                         Annual Mean Temperature
## 2    BIO2    MDR Mean Diurnal Range (Mean of monthly (max temp - min temp))
## 3    BIO3    ISO                         Isothermality (BIO2/BIO7) (×100)
## 4    BIO4    TSsd            Temperature Seasonality (standard deviation ×100)
## 5    BIO5    MaxTWM          Max Temperature of Warmest Month
## 6    BIO6    MTMCM          Min Temperature of Coldest Month
## 7    BIO7    TAR             Temperature Annual Range (BIO5-BIO6)
## 8    BIO8    MTWetQ          Mean Temperature of Wettest Quarter
## 9    BIO9    MTDQ            Mean Temperature of Driest Quarter

```

```

## 10 BI010 MTWarmQ          Mean Temperature of Warmest Quarter
## 11 BI011     MTCQ          Mean Temperature of Coldest Quarter
## 12 BI012     MAP           Annual Precipitation
## 13 BI013     PWM           Precipitation of Wettest Month
## 14 BI014     PDM           Precipitation of Driest Month
## 15 BI015     PSsd          Precipitation Seasonality (Coefficient of Variation)
## 16 BI016     PWwetQ         Precipitation of Wettest Quarter
## 17 BI017     PDQ           Precipitation of Driest Quarter
## 18 BI018     PWarmQ         Precipitation of Warmest Quarter
## 19 BI019     PCQ           Precipitation of Coldest Quarter

pdf("plot_AFpatterns.pdf", width=3, height=8)
par(mar=c(1,2,5,1,0), mfrow=c(6,1))

matplot(t(mut_freq[[1]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Mean Annual Temperature")
matplot(t(mut_freq[[2]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Mean Temperature of Warmest Quarter")
matplot(t(mut_freq[[3]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Mean Temperature of Coldest Quarter")
matplot(t(mut_freq[[4]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Precipitation of Driest Month")
matplot(t(mut_freq[[5]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Precipitation of Wettest Month")
matplot(t(mut_freq[[6]]), type="l", bty="l", ylab="", xlab="", xaxt = "n")#, main="Precipitation of Warmest Quarter")
dev.off()

## pdf
## 2

```

Calculate RDA without nuisance environmental variables and without structure correction

```

rdaout <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
                subset_indPhen_df$env2_MTWetQ +
                subset_indPhen_df$env3_MTDQ +
                subset_indPhen_df$env4_PDM +
                subset_indPhen_df$env5_PwarmQ +
                subset_indPhen_df$env6_PWM
                )

write.table(t(G_full_subset), "../tutorial/Genotypes.txt", col.names =FALSE, row.names=FALSE)
write.table(subset_indPhen_df[,-c(1,17,18)], "../tutorial/Individuals.txt", col.names =TRUE, row.names=FALSE)
write.table(muts_full[,c(4,5,6,8,17)], "../tutorial/SNPs.txt", col.names =TRUE, row.names=FALSE)

```

RDA Outputs

```

#str(rdaout)
scores <- scores(rdaout, choices=1:6)
scores

## $species
##                               RDA1        RDA2        RDA3        RDA4
## 1-8      -9.573672e-03 -4.846651e-02  1.688204e-03  1.668423e-02
## 1-27     -1.684736e-02 -1.117227e-02 -4.181609e-02 -9.061324e-03
## 1-34     -6.587686e-03  1.473920e-02 -7.903150e-02 -9.554282e-03
## 1-81      8.154956e-02  3.693784e-02 -6.263948e-03  3.039403e-02
## 1-97      3.396345e-02 -9.319179e-03  6.423649e-03 -3.427415e-02
## 1-153     7.836793e-02  1.927015e-02 -8.299484e-03  3.836295e-02
## 1-154     -6.071557e-03 -1.951689e-02  2.519275e-02 -1.938889e-02

```

```

## 1-206      -8.431487e-03  1.723554e-02 -8.783225e-02 -9.662746e-03
## 1-287      -1.932803e-02 -4.415478e-02 -1.400912e-03  3.377991e-02
## 1-304      -1.606371e-02 -3.697456e-03  6.134560e-03 -5.656507e-03
## 1-346      -2.992324e-03 -6.410165e-02 -2.381476e-02 -9.212822e-03
## 1-364      -2.843159e-02 -2.513990e-02 -7.050057e-02 -2.020961e-02
## 1-368      -2.574312e-02 -4.330283e-03  1.337761e-02  1.076769e-03
## 1-389      7.122839e-02  1.534717e-02 -8.706470e-03  3.590087e-02
## 1-495      -5.009572e-01  6.527123e-02 -8.427378e-02  1.291251e-01
## 1-508      5.748613e-02  1.535086e-02 -7.094506e-03  4.183853e-02
## 1-525      -5.851245e-03 -2.172102e-02  2.776825e-02 -2.122716e-02
## 1-585      -1.182291e-01  1.935562e-01 -1.908419e-01 -2.003897e-02
## 1-689      1.754199e-02 -1.548059e-02 -3.089852e-03 -6.519632e-02
## 1-837      -1.309170e-02 -9.680927e-03 -5.166149e-02 -2.865286e-03
## 1-846      7.252422e-02  1.521649e-02 -9.687286e-03  4.016340e-02
## 1-869      -1.073277e-01 -9.911032e-02 -1.882723e-01 -2.077766e-02
## 1-921      1.908466e-02 -8.441897e-03  4.474440e-03 -8.818528e-02
## 1-933      -3.775210e-04 -2.281940e-02 -3.312544e-03 -1.834692e-03
## 1-1024     -1.675941e-02  7.001290e-03  3.702305e-03  1.368503e-02
## 1-1029     2.722641e-02 -6.155809e-03  5.721674e-03 -2.463667e-02
## 1-1091     -1.712859e-02 -8.713044e-02  5.956531e-03  5.425262e-02
## 1-1113     -7.137127e-03 -2.531289e-02  3.079289e-02 -2.167200e-02
## 1-1155     -2.985482e-02 -1.619422e-02 -5.822728e-02 -3.945020e-03
## 1-1161     -1.712859e-02 -8.713044e-02  5.956531e-03  5.425262e-02
## 1-1224     2.722641e-02 -6.155809e-03  5.721674e-03 -2.463667e-02
## 1-1259     -5.120608e-03 -9.916956e-03  1.765573e-02  4.518898e-03
## 1-1301     -3.511893e-02 -1.338272e-03 -7.126546e-03  2.181189e-02
## 1-1317     -3.775210e-04 -2.281940e-02 -3.312544e-03 -1.834692e-03
## 1-1349     5.866869e-02  3.981476e-02 -1.123190e-03 -7.834804e-02
## 1-1357     4.276415e-02  9.125693e-03  7.275502e-03 -4.797839e-02
## 1-1388     -2.406090e-02  1.595415e-02  4.875456e-02  2.931818e-02
## 1-1444     -4.607500e-03  2.517266e-02  1.095703e-02 -1.505990e-02
## 1-1494     -9.388687e-03 -1.366963e-02  9.032361e-03 -2.797781e-04
## 1-1499     1.571208e-01  2.791793e-02 -2.259494e-02  7.774688e-02
## 1-1538     -2.002619e-02 -7.872503e-03  1.118014e-02 -4.921513e-03
## 1-1566     -9.449896e-03  1.736051e-02  3.420971e-02 -2.961309e-03
## 1-1600     2.837994e-03  1.257107e-02  5.053075e-03 -1.394714e-02
## 1-1635     -8.442653e-03  2.495356e-02  2.521848e-02 -1.867120e-03
## 1-1650     1.365962e-01  2.268607e-02 -2.130717e-02  6.951824e-02
## 1-1685     -1.717523e-02  6.769439e-03  5.469643e-03  1.371323e-02
## 1-1731     1.417431e-01  2.352057e-02 -2.243897e-02  7.189396e-02
## 1-1793     -2.177993e-02 -4.467102e-02 -1.102699e-02  1.584451e-02
## 1-1820     -2.394985e-02  5.079904e-02 -4.833208e-02 -1.292642e-02
## 1-1823     -1.717523e-02  6.769439e-03  5.469643e-03  1.371323e-02
## 1-1851     -2.803699e-02  6.457327e-02  3.073387e-02  1.244376e-02
## 1-1863     -1.966145e-02  4.426308e-02  2.594990e-02 -8.884576e-05
## 1-1903     -1.151987e-02 -1.567515e-02  1.856240e-02 -5.527428e-03
## 1-1928     -6.756801e-04 -2.751660e-02  4.931175e-02 -1.589088e-02
## 1-1928_2   -2.002619e-02 -7.872503e-03  1.118014e-02 -4.921513e-03
## 1-1936     1.395971e-01  2.299521e-02 -2.203508e-02  7.088916e-02
## 1-1955     2.312382e-02  9.095296e-03  4.857952e-03 -4.400533e-02
## 1-1983     6.474396e-03 -1.910226e-02 -5.897548e-02 -2.546161e-03
## 1-1995     -2.847407e-02 -2.494816e-02 -7.037368e-02 -2.042510e-02
## 1-2035     -1.650289e-02  5.717069e-03  2.029217e-02  1.066534e-02
## 1-2061     -9.413979e-03  2.616965e-02  3.034588e-02 -1.710298e-03

```

| | | | | |
|-----------|---------------|---------------|---------------|---------------|
| ## 1-2085 | 2.593395e-02 | -5.740350e-03 | 5.489773e-03 | -2.406645e-02 |
| ## 1-2102 | -1.153285e-02 | -1.260917e-02 | 1.211466e-02 | 4.019441e-03 |
| ## 1-2115 | -1.715329e-02 | 4.247607e-02 | -3.316213e-02 | -6.593447e-03 |
| ## 1-2131 | -5.759555e-03 | 2.893600e-03 | 2.097856e-02 | 9.861136e-03 |
| ## 1-2191 | -8.382734e-03 | 5.275730e-03 | 2.133942e-02 | 5.775818e-03 |
| ## 1-2228 | -2.734327e-02 | -2.510274e-02 | -6.841690e-02 | -2.028489e-02 |
| ## 1-2272 | -1.730570e-02 | -1.330530e-02 | -4.497587e-02 | -1.034612e-02 |
| ## 1-2293 | 2.268744e-03 | 1.216027e-02 | 5.235022e-03 | -1.299627e-02 |
| ## 1-2315 | 3.566471e-02 | 5.691323e-03 | -1.571080e-04 | -2.651145e-03 |
| ## 1-2374 | -2.734327e-02 | -2.510274e-02 | -6.841690e-02 | -2.028489e-02 |
| ## 1-2402 | -9.237214e-03 | 7.952813e-03 | -8.940154e-03 | 4.975143e-03 |
| ## 1-2443 | -7.857751e-03 | 4.727201e-03 | 1.834986e-02 | 5.660774e-03 |
| ## 1-2494 | -9.134265e-03 | 2.426052e-02 | 2.805597e-02 | -1.299739e-03 |
| ## 1-2524 | -2.088811e-02 | -4.876219e-03 | 5.827785e-03 | -1.099443e-03 |
| ## 1-2573 | 5.740804e-01 | 9.942716e-02 | -2.857382e-02 | -1.074172e-01 |
| ## 1-2594 | -9.882601e-03 | -6.685992e-02 | 5.144945e-03 | -2.626715e-03 |
| ## 1-2628 | -6.491174e-02 | -1.177507e-01 | 4.941008e-02 | 1.055450e-01 |
| ## 1-2664 | -2.546715e-02 | -2.596495e-02 | 3.838150e-02 | 6.611986e-03 |
| ## 1-2782 | 2.645347e-04 | -9.024224e-03 | 9.143256e-03 | -4.478772e-02 |
| ## 1-2833 | 2.645347e-04 | -9.024224e-03 | 9.143256e-03 | -4.478772e-02 |
| ## 1-2890 | 4.740874e-02 | 2.494269e-03 | -7.501236e-03 | 2.035250e-02 |
| ## 1-2938 | -2.517967e-02 | 1.714550e-02 | 5.622203e-02 | 2.956978e-02 |
| ## 1-2954 | -7.968600e-03 | -1.694944e-03 | -3.574989e-02 | -2.977522e-03 |
| ## 1-2998 | -1.503492e-02 | -9.688863e-03 | 7.534224e-03 | 5.587222e-04 |
| ## 1-3065 | -1.468148e-02 | 5.980373e-03 | 6.836658e-03 | 1.348756e-02 |
| ## 1-3072 | -8.203915e-03 | -1.462868e-03 | -3.588415e-02 | -2.870922e-03 |
| ## 1-3185 | -3.420877e-02 | -1.003194e-02 | -8.749072e-02 | -1.178791e-02 |
| ## 1-3216 | -1.190724e-02 | 3.009619e-02 | -2.021421e-02 | -9.507654e-03 |
| ## 1-3221 | -4.075948e-02 | -2.225479e-02 | 4.768410e-02 | 2.104614e-02 |
| ## 1-3258 | 8.464841e-03 | 1.696497e-02 | -9.088643e-04 | -2.424009e-02 |
| ## 1-3293 | 5.722392e-02 | 1.525932e-02 | -6.647668e-03 | 3.404167e-02 |
| ## 1-3308 | -4.751898e-03 | 3.117793e-03 | 1.689306e-02 | 9.117213e-03 |
| ## 1-3328 | -7.691421e-03 | 2.250436e-02 | 2.308577e-02 | -1.847186e-03 |
| ## 1-3343 | 5.722392e-02 | 1.525932e-02 | -6.647668e-03 | 3.404167e-02 |
| ## 1-3391 | -6.083714e-03 | 6.375974e-03 | 2.244603e-02 | 1.088291e-02 |
| ## 1-3447 | -6.869576e-03 | -3.503277e-03 | -3.771359e-02 | -3.794685e-03 |
| ## 1-3588 | 1.182285e-02 | -9.167396e-03 | -1.867559e-03 | -4.318379e-02 |
| ## 1-3629 | -2.344869e-02 | -1.012805e-02 | 2.571131e-02 | 1.720260e-02 |
| ## 1-3637 | -2.004636e-02 | 6.009062e-03 | 7.703735e-03 | 1.726890e-02 |
| ## 1-3690 | 1.109562e-02 | 2.217245e-02 | 2.712952e-03 | -3.120219e-02 |
| ## 1-3738 | -4.663539e-03 | -2.314591e-02 | 1.200487e-02 | -1.015131e-01 |
| ## 1-3757 | -5.172748e-02 | 1.067069e-01 | 7.911884e-02 | 1.519776e-03 |
| ## 1-3827 | -1.319681e-01 | -2.310624e-01 | 2.425689e-01 | 1.111547e-01 |
| ## 1-3837 | -1.512940e-02 | 5.069271e-03 | 7.513309e-03 | 1.223564e-02 |
| ## 1-3883 | -2.053130e-03 | -3.629076e-02 | -7.562336e-03 | -2.634649e-03 |
| ## 1-3885 | -2.836895e-02 | 4.155847e-02 | 4.430956e-02 | 1.281716e-02 |
| ## 1-3888 | -2.940873e-02 | -1.547960e-02 | -6.772754e-02 | -9.642546e-03 |
| ## 1-3967 | 6.253560e-02 | 1.687639e-02 | -7.051772e-03 | 3.873029e-02 |
| ## 1-3994 | -1.512940e-02 | 5.069271e-03 | 7.513309e-03 | 1.223564e-02 |
| ## 1-4046 | -7.496734e-03 | -2.460101e-02 | 4.262128e-02 | -1.848097e-03 |
| ## 1-4194 | -1.552625e-02 | -6.149916e-03 | 3.485136e-03 | -1.793316e-02 |
| ## 1-4234 | -2.091670e-02 | 4.733908e-02 | 2.908481e-02 | 1.990433e-04 |
| ## 1-4251 | 6.930306e-02 | 2.293206e-02 | 7.374225e-03 | -6.279237e-02 |
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## 1-4280      4.678199e-04 -2.916427e-02 -6.852422e-03 -5.584985e-03
## 1-4335      -2.110534e-02 -1.639548e-02 -4.856356e-02 -6.457764e-03
## 1-4340      -2.110534e-02 -1.639548e-02 -4.856356e-02 -6.457764e-03
## 1-4349      -2.110534e-02 -1.639548e-02 -4.856356e-02 -6.457764e-03
## 1-4479      -1.772251e-02  5.365606e-03  6.461830e-03  1.400818e-02
## 1-4485      -3.235573e-02 -9.938525e-03  3.017752e-02  1.503002e-02
## 1-4759      -7.228754e-03  2.298882e-02  2.240122e-02 -1.876761e-03
## 1-4796      -2.238901e-03 -1.010764e-02  2.661652e-02  1.342111e-03
## 1-4847      4.486957e-01  4.871575e-02 -3.188998e-02 -1.015989e-01
## 1-4879      -6.201695e-03  2.442794e-02  4.078887e-02 -7.005191e-03
## 1-4883      9.974063e-02  2.985268e-02 -1.744436e-02  5.177329e-02
## 1-4952      -2.091670e-02  4.733908e-02  2.908481e-02  1.990433e-04
## 1-4987      -6.449129e-04 -3.151470e-02 -7.347971e-03 -5.533152e-03
## 1-5005      -1.941750e-02  5.630092e-03  6.019020e-03  1.528530e-02
## 1-5074      -2.026194e-02 -1.564301e-02 -4.737307e-02 -7.101649e-03
## 1-5087      5.433645e-02  2.096540e-02  3.302541e-03 -3.012190e-02
## 1-5156      1.085398e-01  2.978623e-02 -1.436799e-02  6.995076e-02
## 1-5158      -1.844589e-02 -4.313900e-02 -7.203848e-04  3.313302e-02
## 1-5232      -1.292644e-02  1.751135e-02  3.865800e-02  9.761971e-03
## 1-5270      -4.366556e-04 -1.143492e-02  1.647332e-03 -3.667737e-02
## 1-5274      -1.535535e-02  5.525026e-03  7.045461e-03  1.298860e-02
## 1-5307      -1.817902e-02 -1.296139e-02 -4.438689e-02 -7.880094e-03
## 1-5315      -1.700763e-02 -1.641864e-02  2.177596e-02  8.959579e-03
## 1-5336      -1.980028e-02 -1.641558e-02  3.152495e-02 -4.476912e-02
## 1-5374      -1.509564e-02  1.457993e-02 -1.907824e-02  1.233989e-03
## 1-5376      -1.161368e-03 -1.150040e-02  2.643924e-02  1.555426e-03
## 1-5399      -1.367355e-02 -1.279810e-02  1.082646e-02  5.148219e-03
## 1-5411      1.171675e-01  3.361436e-02 -1.661598e-02  7.589801e-02
## 1-5411_2     -1.777573e-02 -1.630398e-02  2.250503e-02  9.412846e-03
## 1-5456      -1.546221e-02  3.526341e-02  4.149850e-02  1.685444e-03
## 1-5494      -7.815668e-03  1.386693e-02 -2.858220e-02 -1.883805e-03
## 1-5543      1.002908e-01  1.492397e-02 -1.174877e-02  4.411218e-02
## 1-5570      4.122948e-02 -9.952750e-03  3.051108e-04 -1.450130e-02
## 1-5588      -2.308878e-02  1.501903e-02  5.570952e-02  2.764098e-02
## 1-5647      1.288063e-01  3.796454e-02 -1.810891e-02  8.701853e-02
## 1-5679      -1.700763e-02 -1.641864e-02  2.177596e-02  8.959579e-03
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## 1-5687      -1.381888e-02  2.773235e-02  3.907161e-02 -3.557710e-03
## 1-5781      -3.046896e-02 -2.776956e-02 -5.740893e-02 -6.882901e-03
## 1-5843      -1.037535e-02  2.708442e-02 -1.960647e-02 -8.483737e-03
## 1-5861      3.183050e-02  1.710471e-02 -6.521297e-03  3.179816e-02
## 1-5874      3.794689e-03  9.593042e-03  6.753520e-03 -6.287908e-03
## 1-5896      -1.855330e-02 -1.153556e-02  4.115223e-02  1.482366e-02
## 1-5957      3.066006e-02  4.045849e-03  1.431883e-03 -8.815629e-03
## 1-6071      -6.093465e-03  1.225631e-02  1.921184e-02  2.663251e-04
## 1-6116      -1.116904e-02 -8.349891e-03  2.202166e-02 -3.962259e-02
## 1-6230      -1.634278e-02  4.683790e-03  5.743930e-03  1.429358e-02
## 1-6236      1.334615e-01  4.274563e-02 -1.885098e-02  9.346356e-02
## 1-6245      -1.730983e-02 -4.315590e-02 -7.051498e-03  1.562437e-02
## 1-6262      2.880743e-03  1.622724e-02  5.325833e-03 -1.233551e-02
## 1-6433      -1.282428e-02 -1.365619e-02  1.709776e-02  5.251319e-03
## 1-6588      -2.367712e-02 -5.580352e-03  2.330281e-02  2.158803e-02
## 1-6703      3.692230e-03 -9.117493e-03 -2.656992e-02 -1.345409e-03

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| | | | | |
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| ## 1-6787 | -2.533788e-02 | 6.293131e-02 | -3.668378e-02 | -1.978118e-02 |
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| ## 1-6928 | -6.027239e-03 | -2.171825e-02 | 3.276825e-02 | -5.551415e-03 |
| ## 1-6956 | -1.399020e-02 | -1.052145e-02 | 3.612750e-02 | 9.307022e-03 |
| ## 1-6998 | 3.855936e-02 | 8.791872e-03 | -4.331564e-03 | 2.113431e-02 |
| ## 1-6999 | 4.368714e-02 | 9.907425e-03 | -5.056839e-03 | 2.261716e-02 |
| ## 1-7048 | -6.980434e-03 | -1.636460e-02 | 2.886641e-02 | -6.602952e-03 |
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| ## 1-7089 | -1.456201e-02 | -9.509594e-03 | 3.757364e-02 | 9.959880e-03 |
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| ## 1-7094 | 1.374828e-02 | -1.166368e-02 | -3.287731e-03 | -5.601823e-02 |
| ## 1-7117 | -1.599352e-03 | -3.704673e-02 | 4.213422e-02 | -1.910535e-02 |
| ## 1-7182 | -8.961282e-03 | -3.081631e-02 | -1.303141e-03 | 8.628268e-03 |
| ## 1-7237 | -6.980434e-03 | -1.636460e-02 | 2.886641e-02 | -6.602952e-03 |
| ## 1-7251 | -2.079960e-02 | 4.695054e-02 | 2.233535e-02 | 9.731039e-03 |
| ## 1-7281 | -1.678207e-02 | 3.489777e-02 | 3.907910e-02 | -5.436345e-04 |
| ## 1-7304 | 7.028351e-02 | 2.684749e-02 | -1.745300e-02 | 4.795658e-02 |
| ## 1-7309 | 4.331189e-02 | 9.868058e-03 | 6.146566e-03 | -5.806744e-02 |
| ## 1-7315 | 1.312481e-02 | -1.606407e-02 | 1.845084e-03 | -2.949199e-02 |
| ## 1-7344 | 1.146036e-01 | 1.458943e-01 | -7.738778e-02 | -1.440737e-02 |
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| ## 1-7386 | -1.585083e-03 | -2.421174e-02 | 2.518141e-02 | -1.044976e-02 |
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| ## 1-7581 | -7.544669e-03 | 1.177166e-02 | 2.674907e-02 | 6.603241e-03 |
| ## 1-7616 | -4.708269e-03 | 1.078635e-03 | -4.130600e-02 | -2.152116e-03 |
| ## 1-7670 | 1.544873e-02 | 4.695097e-03 | 2.806287e-03 | -2.563390e-02 |
| ## 1-7683 | 1.389252e-02 | 2.319574e-02 | 3.146636e-03 | -3.390506e-02 |
| ## 1-7718 | -2.758660e-01 | 1.878808e-01 | 4.824070e-02 | 2.662453e-02 |
| ## 1-7725 | -1.224627e-02 | -1.132742e-02 | 2.685885e-02 | -4.353078e-02 |
| ## 1-7732 | 1.158488e-02 | -1.326430e-02 | -5.986935e-03 | -4.742949e-02 |
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| ## 1-7819 | -1.955314e-01 | 2.925186e-01 | -4.367332e-02 | 1.255403e-02 |
| ## 1-7852 | 6.719911e-02 | 1.461938e-02 | -1.820925e-03 | 9.185392e-03 |
| ## 1-7880 | -5.938862e-03 | -7.316483e-02 | 1.022745e-02 | 3.973511e-02 |
| ## 1-7897 | -8.961282e-03 | -3.081631e-02 | -1.303141e-03 | 8.628268e-03 |
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| ## 1-8243 | -1.913146e-02 | 1.125939e-02 | 3.977246e-02 | 2.460039e-02 |
| ## 1-8317 | -1.062757e-02 | -7.010137e-02 | 9.898644e-03 | 4.243944e-02 |
| ## 1-8356 | 6.417153e-02 | 1.527803e-02 | -8.453347e-03 | 3.901355e-02 |
| ## 1-8413 | -3.565240e-02 | -1.099975e-02 | -9.229482e-02 | -1.234826e-02 |
| ## 1-8430 | -2.723353e-02 | 4.369161e-02 | -7.134213e-02 | -1.443593e-02 |
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## 1-8486      -1.461829e-02  3.632000e-02 -2.610357e-02 -9.725304e-03
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## 1-8599      -4.051340e-03  2.047634e-02  1.531633e-02 -6.353227e-03
## 1-8613      -8.441659e-03  -1.897235e-03 -5.337973e-02 -2.797347e-03
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## 1-8641      -1.728690e-03  -3.359639e-03 -2.664987e-04 -1.433537e-02
## 1-8651      3.942255e-02   1.103166e-02 -3.486486e-03  1.434975e-02
## 1-8716      -1.457317e-02  3.439886e-02  2.262218e-02 -1.303325e-03
## 1-8765      -1.146203e-02  2.502124e-03 -4.206517e-02 -3.432683e-03
## 1-8844      -1.063243e-02  2.485525e-02  3.575302e-02 -3.506070e-03
## 1-8857      2.329828e-02  -4.505592e-03  2.584402e-03 -4.094362e-02
## 1-8896      1.075347e-01   3.740761e-02 -1.416757e-02  8.173588e-02
## 1-8933      -8.479266e-03  1.056602e-02  2.040100e-02  7.306927e-03
## 1-9078      3.926986e-02   8.477232e-04 -6.049370e-03  1.547853e-02
## 1-9086      -8.671968e-03  1.087301e-02  4.141351e-02  1.454366e-02
## 1-9087      -9.007741e-03  1.097928e-02  2.277978e-02  8.872739e-03
## 1-9123      -4.867070e-02  5.700757e-03  1.197522e-02  3.502195e-02
## 1-9153      -1.358475e-02  6.819652e-03  5.495010e-03  1.178814e-02
## 1-9155      -3.801579e-03  1.935840e-02  1.593791e-02 -5.804330e-03
## 1-9190      -3.252492e-03  1.817833e-02  1.404185e-02 -6.439468e-03
## 1-9266      -2.627439e-02  9.624152e-03  7.951275e-03  2.095330e-02
## 1-9280      -6.339121e-03  2.197150e-02 -2.162218e-02 -7.810678e-03
## 1-9341      -1.442369e-02  3.675765e-02  5.031340e-02 -3.600098e-03
## 1-9626      1.529538e-02   -1.294240e-02 -2.571420e-03 -6.588536e-02
## 1-9666      -2.277518e-02  3.505186e-02  3.798588e-02  6.903304e-03
## 1-9684      -2.026140e-02  2.021408e-03 -8.134914e-03  9.793874e-03
## 1-9698      -1.724400e-02  4.016065e-02  2.635420e-02 -4.669652e-04
## 1-9705      -8.159053e-03  -3.064083e-02  5.222117e-02 -1.530618e-02
## 1-9762      -2.520240e-02  6.652606e-02  4.553552e-02  7.137826e-03
## 1-9775      -6.522596e-03  -1.408387e-02  2.031980e-02 -1.826208e-02
## 1-9812      7.231048e-02   1.189977e-02 -1.217878e-02  4.058134e-02
## 1-9829      1.710093e-02   -1.746649e-02 -5.006410e-03 -8.245423e-02
## 1-9859      1.015699e-01   2.199583e-02 -1.256367e-02  5.698784e-02
## 1-9928      -6.023750e-03  4.668290e-03  2.101497e-02  8.291670e-03
## 1-9997      -3.293106e-02  5.043735e-02  5.602672e-02  1.254671e-02
## 1-10005     -1.041919e-03  -3.647960e-02 -7.102929e-03 -3.499507e-03
## 1-10038     1.138155e-01   3.948631e-02 -1.351043e-02  7.467907e-02
## 1-10095     -8.591624e-03  -3.227279e-02 -7.326220e-04  8.251505e-03
## 1-10124     -2.442038e-02  -3.262380e-03 -6.304008e-03  1.406346e-02
## 1-10133     -1.339960e-02  6.753698e-03  4.374388e-03  1.189045e-02
## 1-10175     1.224555e-03   2.574395e-02  1.269174e-02 -1.925621e-02
## 1-10181     -9.653185e-03  -1.675386e-02  1.705356e-02  3.078869e-04
## 1-10209     1.604831e-02   -1.674153e-02  2.036593e-02 -1.313770e-02
## 1-10313     -1.486975e-02  7.328935e-03  4.663434e-03  1.338119e-02
## 1-10372     -5.754534e-03  -2.246626e-02  2.683476e-02 -6.628743e-03
## 1-10439     -2.688978e-02  -1.030984e-02 -7.469752e-02 -1.087183e-02
## 1-10462     -1.100465e-02  2.025280e-02  2.383060e-02 -1.382009e-04
## 1-10531     2.850869e-03   -3.185223e-02 -7.265793e-03 -2.125550e-02
## 1-10535     7.532430e-03   -1.275659e-02 -4.820162e-03 -7.207038e-02
## 1-10541     2.488028e-02   1.610197e-03  2.898754e-03 -1.820523e-02
## 1-10573     -3.328648e-02  -2.044551e-02 -8.332236e-02 -2.201470e-02
## 1-10573_2    -2.754335e-02  -1.018034e-02  5.753648e-02  2.817887e-02
## 1-10719     -7.659594e-03  -4.451851e-02  7.067127e-03  2.460701e-02
## 1-10732     -1.908893e-02  4.384588e-02  2.807506e-02  1.048169e-04

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| | | | | |
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| ## 1-10738 | 7.532430e-03 | -1.275659e-02 | -4.820162e-03 | -7.207038e-02 |
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| ## 1-10824 | -1.486975e-02 | 7.328935e-03 | 4.663434e-03 | 1.338119e-02 |
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| ## 1-10994 | -4.992519e-03 | -2.963618e-03 | -3.087232e-03 | -2.393850e-02 |
| ## 1-11014 | -1.268141e-02 | -5.202016e-02 | 5.131200e-03 | 3.362858e-02 |
| ## 1-11014_2 | -2.639624e-02 | 2.178870e-02 | -1.265866e-01 | -6.989616e-03 |
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| ## 1-11315 | 1.409692e-02 | 3.843185e-03 | 1.170899e-03 | -3.413223e-02 |
| ## 1-11334 | 9.124693e-02 | 1.525067e-02 | -1.460711e-02 | 5.095082e-02 |
| ## 1-11339 | 1.321718e-01 | 4.342196e-02 | -1.451672e-02 | 9.314352e-02 |
| ## 1-11366 | -3.101724e-02 | 1.967099e-02 | 6.757786e-02 | 3.784238e-02 |
| ## 1-11369 | -1.780113e-03 | 1.394895e-02 | 1.104693e-02 | -5.659939e-03 |
| ## 1-11455 | -7.824776e-03 | -4.612010e-02 | 7.606638e-03 | 2.523582e-02 |
| ## 1-11469 | -6.859552e-03 | -2.808632e-03 | 1.462114e-02 | 6.746513e-03 |
| ## 1-11499 | -1.399443e-02 | 1.786181e-02 | 1.871357e-02 | 8.396034e-03 |
| ## 1-11525 | -3.271924e-02 | -2.039739e-02 | 3.401820e-02 | 1.283203e-02 |
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| ## 1-14187 | -6.810022e-03 | -1.525190e-02 | 2.122795e-02 | -1.861661e-02 |
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## 1-19213 -5.807474e-02 -4.294323e-03 -6.867036e-02 7.245747e-03
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## 1-19251 -1.316535e-02 -1.354211e-02 2.043478e-02 3.912392e-04
## 1-19347 -1.199710e-02 -1.358151e-02 2.050671e-02 -4.292781e-04
## 1-19412 -1.791078e-02 -3.369052e-02 -9.845774e-03 1.602256e-02
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| ## 1-20027 | 4.892648e-02 | 5.436289e-03 | -6.409578e-03 | 2.117831e-02 |
| ## 1-20037 | -5.195222e-02 | 1.902424e-02 | 3.521609e-03 | 2.917519e-02 |
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| ## 1-21585 | -2.375650e-02 | 2.725025e-03 | -3.534454e-02 | 6.949495e-04 |
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| ## 1-21867 | -1.036549e-02 | 1.324870e-02 | -2.699412e-02 | -4.636954e-03 |
| ## 1-21901 | -1.969235e-02 | 2.193134e-02 | -4.648003e-02 | -7.636515e-03 |
| ## 1-21993 | -5.115915e-01 | -6.216656e-02 | 4.191655e-02 | -1.740039e-02 |
| ## 1-21995 | -1.488716e-02 | 3.728376e-03 | 1.176251e-02 | 1.490957e-02 |
| ## 1-22012 | 2.661463e-02 | 1.140798e-02 | 6.063686e-03 | -5.543741e-02 |
| ## 1-22015 | -2.134626e-02 | -3.417347e-02 | -1.347369e-02 | 1.385947e-02 |
| ## 1-22022 | -8.978996e-03 | -2.520605e-02 | 2.732682e-02 | -2.044077e-02 |
| ## 1-22118 | -1.429298e-03 | -4.770289e-03 | 1.074064e-03 | -1.793460e-02 |
| ## 1-22145 | -2.206299e-02 | 4.973554e-02 | -1.184651e-01 | -1.401642e-02 |
| ## 1-22208 | 4.709803e-02 | 6.592508e-03 | -3.123774e-03 | 1.942390e-02 |
| ## 1-22217 | -7.396026e-03 | 1.661479e-02 | -4.114888e-02 | -4.840522e-03 |
| ## 1-22242 | -1.919487e-02 | 2.602847e-02 | 1.991852e-02 | 1.278894e-02 |
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| ## 1-22406 | -2.717053e-02 | -7.819441e-03 | -6.985885e-02 | -1.008432e-02 |
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| ## 1-23000 | 1.042817e-03 | 2.813585e-02 | 3.076593e-02 | -1.466631e-02 |
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## 1-23971 -8.515029e-03 -3.615476e-03 3.144349e-02 1.500877e-02
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| ## 1-28247 | 5.548488e-02 | 1.997875e-02 | -1.013216e-02 | 3.719799e-02 |
| ## 1-28276 | 4.240288e-02 | 1.146369e-02 | -2.914852e-03 | 1.517861e-02 |
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| ## 1-28430 | -1.346154e-02 | 2.861503e-02 | -4.425153e-02 | -3.412347e-03 |
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| ## 1-28500 | 5.052815e-03 | -2.787826e-02 | 4.666398e-02 | -1.666206e-02 |
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| ## 1-28553 | -1.971737e-02 | -5.096244e-03 | -5.044035e-02 | -6.033158e-03 |
| ## 1-28567 | 9.067241e-03 | -1.192767e-02 | 1.987654e-03 | -2.327023e-02 |
| ## 1-28577 | 4.210235e-02 | 1.453176e-02 | -5.626593e-03 | 2.044013e-02 |
| ## 1-28626 | -7.980425e-03 | 8.399502e-04 | 1.363635e-02 | 8.973966e-03 |
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| ## 1-28921 | 1.099824e-01 | 3.987129e-02 | 2.141376e-03 | -6.662161e-02 |
| ## 1-28923 | 1.419643e-01 | 1.772252e-02 | -1.667554e-02 | 6.710329e-02 |
| ## 1-28967 | -3.621731e-02 | -1.311674e-02 | 3.268569e-02 | 3.318702e-02 |
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| ## 1-33345 | -7.012173e-03 | -4.108632e-02 | 7.628532e-03 | 2.333323e-02 |
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## 1-33663 -6.823124e-03 -8.719429e-02 1.227011e-02 4.692318e-02
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## 1-33744 7.002742e-03 -1.008288e-02 1.644111e-03 -2.126324e-02
## 1-33829 -1.741491e-02 1.253806e-02 -5.357727e-02 -5.365524e-03
## 1-33893 -1.159152e-02 6.171446e-03 1.395286e-02 1.213038e-02
## 1-33895 2.684356e-02 6.074802e-03 -5.799917e-04 -1.938190e-03
## 1-33941 -1.741491e-02 1.253806e-02 -5.357727e-02 -5.365524e-03
## 1-34021 -1.508933e-02 -1.598734e-03 1.794597e-02 1.213820e-02
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## 1-34390 -1.983503e-02 -2.466207e-03 7.352027e-03 -1.823251e-02
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## 1-34687 -2.231932e-03 -1.572209e-02 2.130072e-02 -8.629069e-03
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## 1-34731 6.432090e-03 -1.124171e-02 9.807269e-04 -2.592711e-02
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## 1-35132 -1.639515e-02 -6.972556e-03 2.434249e-03 -6.753168e-03
## 1-35173 -2.533360e-02 -1.922894e-02 1.938782e-02 1.973981e-03
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| ## 1-38120 | -6.686541e-03 | -6.923426e-03 | 3.576552e-02 | -1.592983e-02 |
| ## 1-38173 | -3.454779e-02 | -8.795099e-03 | 2.085482e-02 | 2.359614e-02 |
| ## 1-38253 | 1.162037e-02 | -1.129762e-02 | -2.083068e-02 | 2.274819e-03 |
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| ## 1-38450 | 5.271523e-02 | 2.368276e-02 | 9.622434e-03 | -1.194986e-01 |
| ## 1-38472 | -1.346080e-02 | -1.764247e-02 | 2.998301e-02 | -2.203654e-02 |
| ## 1-38475 | 1.894764e-02 | -7.993204e-03 | 2.906593e-03 | -2.200280e-02 |
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| ## 1-38823 | -1.285638e-02 | -1.952105e-02 | 2.126849e-02 | 3.928163e-03 |
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| ## 1-39400 | -6.784094e-03 | -6.537092e-02 | 1.019217e-02 | 3.726690e-02 |
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## 1-39839 -2.257811e-02 -3.544487e-04 2.480616e-02 1.543777e-02
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## 1-40311 -9.533384e-04 -4.927116e-02 -3.308687e-03 -6.208239e-03
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| ## 1-45136 | 2.171857e-02 | -1.355717e-02 | -4.744486e-03 | -8.319529e-02 |
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| ## 1-45237 | 1.313751e-02 | 4.672115e-03 | 2.012234e-03 | -3.206266e-02 |
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| ## 1-48478 | -1.250971e-02 | 1.890822e-02 | 3.853929e-02 | 1.049363e-02 |
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| ## 1-48481 | 1.978817e-02 | -1.386288e-02 | -3.827109e-03 | -7.413800e-02 |
| ## 1-48527 | -1.278511e-02 | -1.931808e-02 | -7.015093e-02 | -1.598781e-02 |
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| ## 1-48677 | 1.705472e-01 | 5.141850e-02 | -2.077126e-02 | 1.053691e-01 |
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| ## 1-49939 | 1.417798e-01 | 4.566351e-02 | -2.024045e-02 | 9.400829e-02 |
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| ## 1-49992_2 | 7.197594e-03 | 1.690140e-02 | -1.978432e-03 | -2.081739e-02 |
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| ## 2-52776 | 9.426812e-04 | -1.673566e-02 | -5.478399e-04 | -1.405040e-02 |
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| ## 2-53275 | 2.308423e-01 | 6.032468e-02 | -2.725493e-02 | 1.303836e-01 |
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| ## 2-53937 | -3.990209e-03 | 1.210648e-02 | 2.176341e-02 | -4.190072e-03 |
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| ## 2-54741 | -1.813078e-02 | -7.402503e-03 | 8.430786e-03 | -6.422335e-03 |
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## 2-63915 -8.112897e-03 9.001657e-03 2.333727e-02 4.342366e-03
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| ## 2-66365 | 6.297724e-03 | 1.409444e-02 | -1.844948e-03 | -2.262400e-02 |
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| ## 2-67048 | -8.221529e-03 | -6.313435e-03 | 1.402937e-02 | -1.210461e-02 |
| ## 2-67078 | -2.034610e-02 | 3.653383e-02 | -8.040682e-02 | -8.373828e-03 |
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| ## 2-67399 | 2.670479e-02 | 6.209697e-03 | -3.645687e-03 | 9.571797e-03 |
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| ## 2-67627 | 3.049539e-02 | -8.024773e-03 | 4.304805e-03 | -6.128905e-02 |
| ## 2-67630 | -8.089111e-03 | 1.024194e-02 | 3.016020e-02 | 9.145110e-03 |
| ## 2-67661 | -3.873185e-02 | -2.206604e-02 | -8.686239e-02 | -1.946475e-02 |
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| ## 2-67821 | 3.126463e-02 | -5.247502e-03 | 1.141501e-05 | -5.772819e-02 |
| ## 2-67824 | -3.671424e-02 | 7.248437e-04 | 6.271040e-03 | 2.316967e-02 |
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| ## 2-67956 | -3.925710e-03 | 1.969177e-02 | 3.484028e-02 | -1.187203e-02 |
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| ## 2-68413 | -2.803699e-02 | 6.457327e-02 | 3.073387e-02 | 1.244376e-02 |
| ## 2-68431 | -2.056134e-02 | 4.628156e-02 | 2.552766e-02 | -1.020259e-03 |
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| ## 2-68727 | -2.803699e-02 | 6.457327e-02 | 3.073387e-02 | 1.244376e-02 |
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| ## 2-68873 | -2.803699e-02 | 6.457327e-02 | 3.073387e-02 | 1.244376e-02 |
| ## 2-68889 | -5.969413e-03 | -9.910062e-03 | 2.009599e-02 | 6.757998e-03 |
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| ## 2-70818 | 7.670811e-03 | 3.147960e-02 | 5.766708e-03 | -3.016817e-03 |
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| ## 2-70853 | 2.379124e-02 | -4.806562e-03 | -1.177364e-03 | -4.791413e-02 |
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| ## 2-71241 | -1.911522e-02 | 9.363702e-04 | 9.385894e-04 | -3.427229e-03 |
| ## 2-71271 | -8.751478e-03 | 2.788930e-02 | 3.190944e-02 | -2.472824e-03 |
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| ## 2-71368 | -1.446148e-03 | -3.110181e-02 | -1.709583e-03 | -4.037241e-03 |
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| ## 2-71510 | 1.416934e-02 | 9.841087e-03 | 4.407992e-03 | -4.085933e-02 |
| ## 2-71514 | -1.075074e-02 | 1.792955e-02 | 2.150789e-02 | 1.755076e-03 |
| ## 2-71530 | 1.800438e-03 | 1.958408e-02 | -2.679734e-02 | -8.903458e-05 |
| ## 2-71531 | -1.755761e-02 | -9.479746e-03 | 3.483255e-02 | 1.694200e-02 |
| ## 2-71561 | -1.379871e-02 | -1.403291e-03 | -5.412200e-02 | -1.818288e-03 |
| ## 2-71606 | 3.061036e-01 | -6.227141e-02 | -1.262777e-01 | -4.022789e-02 |
| ## 2-71653 | -1.412445e-02 | 7.520314e-03 | 1.449380e-02 | 1.499564e-02 |
| ## 2-71707 | -1.393623e-02 | 3.533446e-02 | -2.613885e-02 | -7.227093e-03 |
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| ## 2-71846 | 1.992977e-02 | -1.662828e-02 | 9.265416e-04 | -3.153226e-02 |
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| ## 2-71900 | -1.141504e-02 | 2.181689e-02 | 3.302367e-02 | 2.281276e-03 |
| ## 2-71902 | -5.185014e-02 | 2.082625e-04 | 3.485901e-03 | 3.159609e-02 |
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| ## 2-72042 | -8.235745e-03 | 1.734046e-02 | 2.968981e-02 | -2.103654e-04 |
| ## 2-72170 | -2.988192e-02 | 6.825850e-02 | 3.245473e-02 | 1.301554e-02 |
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| ## 2-72325 | -2.631780e-03 | -7.075182e-02 | 1.051517e-02 | 3.429793e-02 |
| ## 2-72359 | -3.060632e-02 | -8.176754e-03 | 2.683363e-02 | 2.965760e-02 |
| ## 2-72374 | -1.313907e-02 | 3.311227e-02 | -2.019328e-02 | -5.618407e-03 |
| ## 2-72382 | 4.364239e-02 | 1.818041e-02 | -5.248138e-03 | 3.898196e-02 |

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| ## 2-72463 | 3.523894e-02 | 9.169014e-03 | -2.756401e-03 | 1.883723e-02 |
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| ## 2-72524 | -8.035450e-03 | 1.044689e-02 | 2.493886e-02 | 1.342455e-02 |
| ## 2-72601 | -7.284041e-03 | -2.977132e-02 | -6.436576e-04 | 5.093301e-03 |
| ## 2-72628 | 4.982614e-01 | 3.173167e-02 | 2.050460e-03 | -8.513587e-02 |
| ## 2-72656 | 2.691310e-02 | -3.090120e-03 | 2.559643e-03 | -3.930675e-02 |
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| ## 2-72717 | 5.160015e-03 | -1.035137e-02 | 7.362573e-04 | -3.363570e-02 |
| ## 2-72728 | -2.269191e-03 | -7.326369e-02 | 1.198183e-02 | 3.480734e-02 |
| ## 2-72755 | -4.943991e-04 | -3.216844e-02 | -4.639371e-03 | -7.094244e-03 |
| ## 2-72762 | 3.722298e-02 | 5.471413e-03 | -6.022073e-03 | 2.011127e-02 |
| ## 2-72863 | -1.620026e-02 | 9.384624e-03 | 1.171101e-02 | 1.593872e-02 |
| ## 2-72907 | -5.584922e-02 | -1.456968e-02 | 4.723866e-02 | 5.336927e-03 |
| ## 2-72926 | -1.403367e-02 | 3.134212e-02 | -2.816225e-02 | -6.052177e-03 |
| ## 2-72926_2 | 3.373209e-02 | 8.969145e-03 | -2.753334e-03 | 1.860119e-02 |
| ## 2-72939 | -8.035450e-03 | 1.044689e-02 | 2.493886e-02 | 1.342455e-02 |
| ## 2-72954 | -1.787732e-03 | -7.022275e-03 | 1.064640e-02 | 1.410741e-02 |
| ## 2-72993 | -1.872849e-02 | 4.215013e-02 | 5.402356e-02 | 5.785865e-03 |
| ## 2-72997 | 4.305566e-02 | 1.725140e-02 | -7.561834e-03 | 2.958007e-02 |
| ## 2-72999 | -1.988574e-02 | 4.746411e-02 | -3.373037e-02 | -8.916895e-03 |
| ## 2-73114 | -1.886717e-02 | -4.273171e-03 | 1.015927e-02 | -6.376145e-03 |
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| ## 2-73222 | -3.885178e-02 | -1.432188e-02 | -8.016143e-02 | -7.969953e-03 |
| ## 2-73262 | -2.973253e-02 | -1.410683e-02 | 3.518367e-02 | 2.990165e-02 |
| ## 2-73262_2 | 1.594767e-02 | -7.422338e-04 | 5.553655e-04 | -2.560358e-02 |
| ## 2-73276 | -1.156781e-02 | -8.518569e-03 | 2.838800e-02 | 1.187752e-02 |
| ## 2-73289 | 1.956224e-01 | 3.338499e-01 | 1.744394e-01 | -6.516823e-02 |
| ## 2-73373 | -2.001982e-02 | -1.326726e-02 | -4.775865e-02 | -8.410531e-03 |
| ## 2-73386 | -2.790496e-02 | -8.890566e-03 | 2.328667e-02 | 2.918642e-02 |
| ## 2-73406 | 2.944750e-02 | -1.002770e-02 | 2.950105e-03 | -3.440682e-02 |
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| ## 2-73553 | 1.214168e-02 | 5.429644e-03 | 6.679919e-03 | -3.535883e-02 |
| ## 2-73582 | -1.487878e-02 | 1.488302e-03 | -3.139209e-02 | 6.469977e-03 |
| ## 2-73590 | -1.136037e-02 | 2.411573e-02 | 3.845532e-02 | -9.848951e-04 |
| ## 2-73606 | -1.487878e-02 | 1.488302e-03 | -3.139209e-02 | 6.469977e-03 |
| ## 2-73623 | 1.462392e-02 | -1.636263e-02 | 1.403926e-03 | -4.120324e-02 |
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| ## 2-73707 | 4.480830e-03 | -1.722672e-02 | 1.117636e-02 | -4.822255e-02 |
| ## 2-73742 | -1.393129e-02 | 2.471297e-02 | -8.289167e-02 | -6.014443e-03 |
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| ## 2-74214 | -2.168281e-02 | 1.182261e-02 | 1.893640e-02 | 2.177536e-02 |
| ## 2-74272 | -3.773924e-02 | -9.725055e-03 | 3.097131e-02 | 3.442325e-02 |
| ## 2-74276 | 4.031917e-02 | 8.021508e-03 | 8.094192e-03 | -2.907412e-02 |
| ## 2-74322 | 8.936386e-03 | 4.017398e-03 | 1.156103e-02 | -1.299560e-02 |
| ## 2-74330 | -4.187767e-03 | -2.028703e-02 | 2.556538e-02 | -6.079866e-03 |
| ## 2-74338 | 1.320374e-02 | 1.551986e-02 | -7.393737e-04 | -2.518232e-02 |
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| ## 2-74456 | 4.666712e-02 | 6.733818e-03 | -3.960063e-03 | 1.717150e-02 |
| ## 2-74572 | 1.006472e-02 | 1.111713e-02 | 6.053319e-03 | -3.276145e-02 |
| ## 2-74574 | -3.163844e-02 | 7.343866e-02 | 2.209404e-02 | 7.744002e-03 |
| ## 2-74576 | 2.353167e-02 | -2.546131e-02 | -2.536559e-03 | -7.012237e-02 |
| ## 2-74591 | -1.724075e-04 | -4.691002e-02 | -2.145445e-02 | -8.800108e-03 |
| ## 2-74654 | -2.613324e-02 | 6.038365e-02 | 2.880104e-02 | 1.236891e-02 |
| ## 2-74683 | 1.733407e-02 | -3.164765e-03 | 1.447200e-03 | -4.831889e-02 |
| ## 2-74716 | -2.613324e-02 | 6.038365e-02 | 2.880104e-02 | 1.236891e-02 |
| ## 2-74776 | -4.366518e-03 | -7.218890e-03 | 1.612071e-02 | -5.589053e-03 |
| ## 2-74777 | -1.109638e-02 | 3.180584e-02 | 3.888169e-02 | -3.791443e-03 |
| ## 2-74800 | 3.706868e-02 | 1.600663e-02 | -2.527562e-03 | -5.721949e-02 |
| ## 2-74815 | 2.441276e-02 | -2.422225e-02 | 2.075600e-03 | -8.009630e-02 |
| ## 2-74865 | -1.012301e-02 | -1.111813e-02 | 1.517280e-02 | 1.453700e-03 |
| ## 2-74867 | -1.355179e-02 | -8.234212e-03 | -3.340203e-02 | -1.192491e-02 |
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| ## 2-74964 | -1.136908e-02 | 1.808237e-02 | -6.657705e-03 | -9.005898e-04 |
| ## 2-75009 | -4.150450e-03 | -3.074180e-02 | -2.550149e-03 | 9.567322e-04 |
| ## 2-75044 | 5.832939e-02 | 1.327941e-02 | -9.164315e-03 | 3.187883e-02 |
| ## 2-75049 | -4.083198e-02 | 2.683009e-02 | 5.354472e-02 | 3.083790e-02 |
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| ## 2-75124 | -3.934501e-03 | 1.309906e-02 | 2.421906e-02 | -4.065365e-03 |
| ## 2-75278 | -1.323876e-02 | 2.291834e-02 | 4.006102e-02 | 1.095090e-03 |
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| ## 2-75317 | 5.162941e-02 | -2.877118e-02 | 3.669707e-03 | -1.115914e-01 |
| ## 2-75319 | 1.924268e-01 | 2.754692e-02 | -2.359197e-02 | 6.971952e-02 |
| ## 2-75354 | -3.413451e-03 | 1.137318e-02 | 2.103599e-02 | -3.421134e-03 |
| ## 2-75386 | -2.352146e-02 | 8.227468e-03 | -8.200158e-02 | -5.447830e-03 |
| ## 2-75398 | -2.836382e-02 | -1.190048e-02 | -7.814190e-02 | -1.040799e-02 |
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| ## 2-75537 | -2.613324e-02 | 6.038365e-02 | 2.880104e-02 | 1.236891e-02 |
| ## 2-75565 | 3.800929e-03 | 5.883467e-03 | 2.020236e-02 | -2.902901e-02 |
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| ## 2-75844 | 3.011929e-02 | 1.017157e-02 | -4.678601e-03 | 2.029359e-02 |
| ## 2-75853 | -1.680219e-02 | 1.134295e-02 | -4.024221e-02 | -3.225580e-03 |

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| ## 2-75881 | -2.032550e-03 | -7.703166e-02 | 1.199687e-02 | 3.717913e-02 |
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| ## 2-75970 | 3.048447e-01 | 7.678329e-02 | -3.741915e-02 | 1.735034e-01 |
| ## 2-75977 | 1.647054e-02 | -2.639702e-03 | 1.336951e-03 | -4.701468e-02 |
| ## 2-76011 | -3.303402e-04 | -4.769793e-03 | -7.230856e-02 | -3.879656e-03 |
| ## 2-76017 | -1.101048e-02 | 2.103118e-02 | 3.311502e-02 | -1.899700e-04 |
| ## 2-76043 | -3.151708e-02 | -4.423761e-02 | -1.925046e-02 | 2.941790e-02 |
| ## 2-76216 | -3.904096e-03 | -8.852105e-02 | 1.397670e-02 | 4.321513e-02 |
| ## 2-76237 | -3.519555e-03 | -2.907368e-02 | 5.217810e-02 | -1.079623e-02 |
| ## 2-76313 | 1.158385e-02 | -1.347878e-02 | 5.474469e-05 | -3.600885e-02 |
| ## 2-76465 | -1.966375e-02 | 4.410096e-02 | -3.089158e-02 | -8.360752e-03 |
| ## 2-76479 | -2.131199e-02 | -3.906269e-03 | 9.749453e-03 | 1.332908e-02 |
| ## 2-76541 | -1.509864e-02 | 4.947563e-02 | -3.270815e-02 | -9.123735e-03 |
| ## 2-76580 | -4.961364e-03 | -2.209701e-02 | 4.124185e-02 | -9.373266e-03 |
| ## 2-76609 | 3.533634e-02 | -1.853433e-02 | -1.076636e-03 | -6.221297e-02 |
| ## 2-76621 | -7.318392e-03 | -8.652975e-03 | 2.168406e-02 | -3.335490e-02 |
| ## 2-76659 | -1.271827e-02 | 5.443300e-03 | 1.065427e-02 | 1.245054e-02 |
| ## 2-76686 | -1.235962e-02 | 5.254026e-03 | 9.019722e-03 | 1.222376e-02 |
| ## 2-76700 | -1.362288e-02 | -4.131877e-02 | -5.390870e-03 | 9.422537e-03 |
| ## 2-76790 | -1.910930e-02 | 2.744510e-02 | 2.438453e-02 | 1.057213e-02 |
| ## 2-76805 | -8.519954e-02 | -4.004696e-02 | -1.964837e-01 | -3.459251e-02 |
| ## 2-76954 | 4.701883e-02 | 3.775426e-03 | -4.600340e-03 | 1.365273e-02 |
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| ## 2-77066 | 1.008557e-01 | 3.989392e-02 | -1.470714e-02 | 8.052693e-02 |
| ## 2-77085 | 3.535586e-02 | 5.539201e-03 | -3.133444e-03 | 1.576327e-02 |
| ## 2-77114 | 3.067991e-02 | -1.571995e-02 | -6.884283e-04 | -4.984802e-02 |
| ## 2-77120 | 3.899616e-02 | 5.781032e-03 | -3.738320e-03 | 1.735220e-02 |
| ## 2-77173 | -4.609231e-02 | -8.689648e-03 | 4.031927e-02 | 3.702032e-02 |
| ## 2-77182 | -2.836382e-02 | -1.190048e-02 | -7.814190e-02 | -1.040799e-02 |
| ## 2-77189 | 1.291679e-01 | 4.906019e-02 | -1.807805e-02 | 9.582927e-02 |
| ## 2-77202 | 1.132329e-02 | 3.161446e-02 | -3.918082e-03 | -4.220183e-02 |
| ## 2-77231 | -7.954111e-03 | 1.734624e-02 | 2.784210e-02 | -3.499990e-03 |
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| ## 2-77269 | 1.306747e-01 | 4.926006e-02 | -1.808111e-02 | 9.606530e-02 |
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## 2-80486 -1.028841e-02 1.554198e-02 3.268471e-02 1.218873e-02
## 2-80509 -1.413674e-02 -2.580364e-03 1.498796e-02 1.139635e-02
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| ## 2-84142 | 2.410248e-02 | -2.766376e-02 | -5.115309e-03 | -7.361927e-02 |
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| ## 2-84527_2 | -1.416680e-02 | 2.845405e-02 | 5.208882e-02 | -3.662893e-03 |
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## 2-86099 -1.551358e-02 -1.422908e-02 1.454657e-02 7.463011e-03
## 2-86104 -1.025576e-02 -6.284344e-02 1.004163e-02 3.607469e-02
## 2-86164 1.709330e-02 8.038084e-03 1.272854e-02 -2.737734e-02
## 2-86219 -9.953482e-03 1.729588e-02 2.997663e-02 9.476838e-03
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| ## 2-92752 | -2.825666e-02 | -3.404048e-02 | -2.187954e-02 | 1.735112e-02 |
| ## 2-92761 | -3.054495e-02 | -1.379434e-01 | 2.670002e-03 | 7.427382e-02 |
| ## 2-92787 | 8.100979e-03 | -1.042337e-02 | -1.281677e-03 | -2.451349e-02 |
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| ## 2-98098 | 2.689572e-02 | 1.890980e-02 | 8.545775e-03 | -3.638547e-02 |
| ## 2-98152 | -7.317719e-02 | -1.054432e-03 | -1.691573e-01 | -1.491068e-02 |

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## 2-98154 -3.062434e-02 -7.418034e-03 -1.432287e-02 9.032466e-03
## 2-98170 -6.202205e-03 -2.165977e-02 3.739936e-02 -8.663981e-03
## 2-98195 -9.369380e-03 1.289656e-02 2.494832e-02 8.697839e-04
## 2-98231 -1.480454e-02 -1.272426e-02 1.580599e-02 1.095573e-02
## 2-98234 7.834404e-03 -4.301630e-03 5.609701e-03 -2.631124e-02
## 2-98281 -1.473521e-02 2.366323e-02 -7.151011e-02 -7.439601e-03
## 2-98307 2.689572e-02 1.890980e-02 8.545775e-03 -3.638547e-02
## 2-98307_2 -1.654928e-02 -7.144985e-04 1.515815e-02 1.035241e-02
## 2-98354 -1.948917e-03 -1.447656e-02 3.197782e-02 -5.399665e-03
## 2-98520 7.291962e-03 3.131901e-02 4.672773e-03 -3.067287e-02
## 2-98538 1.132390e-03 -1.535902e-02 2.683804e-02 -2.943275e-03
## 2-98547 -1.327787e-02 1.794335e-02 -3.789088e-02 -9.077702e-03
## 2-98560 -5.501212e-02 -1.812463e-01 -5.082957e-03 9.224259e-02
## 2-98580 -1.004744e-02 2.812613e-02 4.650541e-02 -1.087841e-03
## 2-98586 3.105840e-02 -8.059352e-03 -2.822158e-03 -2.285692e-02
## 2-98659 -2.082125e-02 -2.847535e-02 3.112467e-02 -8.493320e-03
## 2-98662 -1.970999e-01 3.715090e-01 3.709906e-02 4.400003e-02
## 2-98669 -3.027800e-02 -1.533859e-02 1.449748e-02 -2.859326e-03
## 2-98723 -1.385329e-02 2.012175e-02 -3.634485e-02 -8.898804e-03
## 2-98770 -1.929876e-02 -3.417025e-02 -1.437390e-02 1.383726e-02
## 2-98776 -1.933732e-02 -3.841559e-02 3.629874e-02 2.046916e-03
## 2-98804 -2.127082e-02 -2.909713e-02 3.168857e-02 -8.339181e-03
## 2-98864 2.638779e-02 7.702557e-03 -2.690727e-03 7.995050e-03
## 2-98892 7.917034e-03 -5.205084e-03 4.632543e-03 -2.621997e-02
## 2-98927 -1.855293e-02 4.245388e-02 2.249537e-02 -1.040500e-03
## 2-99054 6.365741e-02 1.246661e-02 -3.255206e-03 1.210898e-02
## 2-99142 -3.091766e-04 -2.619280e-02 -3.300303e-03 -4.912696e-03
## 2-99178 -1.161905e-02 1.036801e-02 2.696938e-02 7.950314e-03
## 2-99266 -1.025184e-03 -2.745939e-02 -3.637565e-03 -4.282167e-03
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## 2-99326 5.087685e-02 1.039736e-02 -1.519786e-03 5.592351e-03
## 2-99328 -2.335620e-03 -1.681335e-02 3.537010e-02 -4.847923e-03
## 2-99341 -7.020590e-03 -3.518382e-02 -9.197454e-04 7.766420e-03
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## 2-99493 2.993663e-04 -1.614493e-02 2.839443e-02 -6.809653e-03
## 2-99495 -6.635048e-03 2.581346e-02 -2.463094e-02 -7.006565e-03
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## 2-99570 -3.685938e-03 -2.796085e-02 2.480639e-02 -7.893086e-03
## 2-99684 -2.287348e-02 2.783700e-02 -1.260695e-01 -1.429648e-02
## 2-99709 -2.251489e-02 -6.793375e-03 5.816819e-03 1.047049e-02
## 2-99743 -5.954080e-02 -2.546349e-01 -1.021919e-02 1.019901e-01
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## 2-99824 -1.659289e-02 3.702090e-02 6.031792e-02 4.945443e-03
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## 3-100007 -1.796925e-02 4.085676e-02 2.600571e-02 1.501845e-04
## 3-100023 -6.526668e-03 -1.492106e-02 4.739342e-02 8.747049e-03
## 3-100050 6.054428e-03 2.754156e-02 -1.163549e-03 -3.243784e-02
## 3-100057 -1.624555e-02 -9.602505e-03 8.456529e-03 7.982793e-03
## 3-100109 -4.750541e-03 3.228244e-03 1.959940e-02 8.632166e-03
## 3-100145 5.180229e-02 1.287156e-02 -6.524546e-03 3.354711e-02

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## 3-100259     -1.095180e-02 -3.605016e-02  6.106234e-03  2.391847e-02
## 3-100371      3.065174e-03 -2.487752e-02 -5.632107e-02 -4.718024e-03
## 3-100398     -1.811969e-02  1.801501e-02  5.887327e-02  1.166184e-02
## 3-100436      4.790708e-02  2.282278e-02 -7.485471e-03  4.685076e-02
## 3-100448      9.034693e-03  2.376521e-02  2.845872e-02 -3.334649e-02
## 3-100449     -1.624555e-02 -9.602505e-03  8.456529e-03  7.982793e-03
## 3-100487     -1.778040e-02 -7.464445e-03  1.681881e-02  1.908728e-02
## 3-100502     -1.793500e-02 -2.180457e-02  3.718781e-02 -3.662233e-02
## 3-100509     -1.794382e-02  1.400266e-02 -1.330085e-01 -1.688446e-02
## 3-100515     -6.257141e-03  3.469060e-03 -4.966438e-02 -3.445530e-03
## 3-100567     -1.327274e-02  3.546723e-02  4.806634e-02 -5.862932e-03
## 3-100644     -1.778040e-02 -7.464445e-03  1.681881e-02  1.908728e-02
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## 3-100787     -2.533996e-02  4.845006e-02  3.247534e-02  5.866685e-03
## 3-100800      2.609705e-02  6.966269e-03  1.732793e-03 -3.064692e-02
## 3-100855     -2.831882e-02 -8.864150e-03  2.288541e-02  2.988602e-02
## 3-101017     -1.868034e-02  6.922149e-03  5.292310e-03  1.566193e-02
## 3-101022     -6.036265e-03  8.933462e-03  1.232414e-02  3.340850e-03
## 3-101054      6.880856e-03  1.745804e-02  1.940363e-02 -3.247140e-02
## 3-101062     -7.948058e-03 -6.266038e-02  1.516923e-03  2.668212e-03
## 3-101114      1.119338e-01  2.894092e-02 -1.567268e-02  6.993412e-02
## 3-101238      3.847915e-02  9.140071e-03 -4.521179e-03  2.262550e-02
## 3-101248      3.680757e-02  7.246860e-03 -1.561937e-03  1.103004e-02
## 3-101397     -1.352273e-02 -5.667807e-03  1.748410e-02  6.060134e-03
## 3-101423     -1.894207e-02 -4.262456e-02  3.000476e-03 -4.544357e-03
## 3-101430     -3.140163e-02 -1.215878e-02  3.294769e-02  2.370618e-02
## 3-101471      4.270705e-01  2.820119e-03 -1.669664e-02 -1.296052e-01
## 3-101495     -2.708208e-02  1.038923e-02  3.032226e-02  2.335064e-02
## 3-101511     -5.388553e-03  6.934972e-03  2.355871e-02  6.367449e-03
## 3-101549     -1.813479e-02  4.677387e-02  4.704445e-02 -4.796374e-03
## 3-101574     -1.278775e-02 -1.299018e-01  1.921385e-02  5.210301e-02
## 3-101577     -2.018742e-02  3.683441e-02 -3.401612e-02 -1.033960e-02
## 3-101603      3.983906e-02 -1.858480e-02  8.231577e-04 -4.905794e-02
## 3-101637      6.050879e-02  3.748664e-02  2.435755e-02 -7.426208e-02
## 3-101682     -2.106357e-02  8.189039e-03  1.188090e-02  1.905136e-02
## 3-101685     -2.511003e-02  5.799385e-02  2.768545e-02  1.210066e-02
## 3-101704     -2.230762e-02 -4.858611e-03  4.829173e-03 -1.080890e-03
## 3-101707     -2.006863e-02 -6.054420e-03  2.478739e-02  1.134709e-02
## 3-101734     -1.631021e-02  6.102608e-03  5.214594e-03  1.388599e-02
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## 3-101835     -2.515006e-02 -3.125406e-03 -5.329966e-02 -6.179710e-03
## 3-101850      3.604845e-02 -3.459400e-03 -5.504029e-03  8.333314e-03
## 3-102109     -6.583407e-03 -2.768763e-02  2.991021e-02 -5.732616e-02
## 3-102128      4.795927e-02  1.035629e-02  1.962186e-03 -1.117894e-02
## 3-102161     -3.096997e-03  1.127540e-02  1.771011e-02  7.648166e-05
## 3-102223      2.454390e-02  1.287199e-02  5.893755e-03 -6.686074e-02
## 3-102373     -2.516741e-01  2.643967e-01  3.240561e-02  5.804155e-02
## 3-102375     -1.710812e-02  2.852859e-02  4.370176e-02 -7.482796e-04
## 3-102413      4.135907e-02  1.039512e-02 -6.010475e-03  2.467246e-02
## 3-102414     -9.754449e-03 -4.615350e-02 -1.374963e-01 -1.956217e-02
## 3-102484     -1.051998e-02  2.105888e-02 -2.992787e-02 -2.264335e-03
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## 3-102712     -3.380152e-02  -1.946430e-02   6.077760e-03   8.743468e-03
## 3-102760     -2.601821e-02  -1.020566e-02  -6.817695e-02  -9.945537e-03
## 3-102916     -1.316511e-02  -5.045993e-02   7.907670e-03   3.279861e-02
## 3-102924     -8.128932e-03   9.024231e-03   2.675295e-02   8.804395e-03
## 3-103108     8.818944e-03  -1.202193e-02   2.348763e-03  -2.650450e-02
## 3-103182     3.355468e-02   7.211185e-03   3.005591e-04   1.860873e-03
## 3-103206     -7.784686e-03  -1.627272e-02   2.666387e-02  -2.591930e-02
## 3-103297     -2.698254e-02  -8.746851e-03   2.286152e-02   2.812209e-02
## 3-103332     -1.389959e-02  -3.218985e-02  -1.175452e-02   1.056843e-02
## 3-103447     4.864481e-03  -1.784817e-02  -3.233020e-02  -1.565975e-03
## 3-103453     -1.111426e-02  -7.832509e-02   1.294273e-02   4.425401e-02
## 3-103456     -3.226719e-02  -1.220680e-02  -8.481364e-02  -1.022615e-02
## 3-103479     -1.790350e-02  -1.379011e-02  -4.605285e-02  -1.166945e-02
## 3-103510     2.323302e-02   5.203751e-03   1.303110e-03  -2.762767e-02
## 3-103541     -4.961567e-02  -3.377954e-02  -1.055154e-01  -1.304809e-02
## 3-103552     -1.293208e-02   3.710582e-02   3.858059e-02  -3.110554e-03
## 3-103637     -2.043750e-02   4.131422e-02  -3.356554e-02  -1.117670e-02
## 3-103654     -3.676183e-03   3.350620e-03  -3.663876e-02  -1.307253e-03
## 3-103718     -4.588144e-02   9.389009e-02   6.745113e-02   1.350890e-02
## 3-103734     -3.726943e-03   3.644443e-03   2.759520e-02   4.182118e-03
## 3-103771     -1.995249e-02  -3.901445e-02  -2.811357e-02   2.501172e-03
## 3-103788     -2.378008e-02  -2.825882e-02  -2.698547e-02   8.491535e-03
## 3-103924     -1.031584e-02  -1.211733e-01   1.948084e-02   6.485260e-02
## 3-104038     4.040279e-03  -2.507401e-02   3.917238e-02  -1.579102e-02
## 3-104050     -4.551787e-03   5.924021e-03   2.248814e-02   6.494915e-03
## 3-104141     1.032847e-02   1.670723e-02   2.641054e-02  -1.714427e-02
## 3-104209     3.530278e-02   1.178671e-03  -3.537040e-03   6.300702e-03
## 3-104271     -2.094333e-02  -3.695223e-02  -1.472297e-02   1.464574e-02
## 3-104327     -8.189956e-03   1.954444e-02   3.907115e-02  -4.151097e-03
## 3-104365     -2.495988e-02   7.924400e-03   1.111720e-02   2.106384e-02
## 3-104437     -2.207970e-02  -1.192340e-03  -4.519256e-02  -3.918236e-03
## 3-104631     -2.728457e-02  -1.552266e-02   1.700712e-02   7.594386e-04
## 3-104642     6.936246e-03  -1.138590e-02   2.486145e-03  -2.622324e-02
## 3-104647     4.981971e-01   1.151855e-01   6.321924e-03   8.363468e-03
## 3-104659     5.028063e-01   3.884228e-02   1.333996e-01  -1.233453e-01
## 3-104732     8.512216e-02   2.563885e-02  -1.259271e-02   5.484836e-02
## 3-104763     -2.267479e-02   6.434271e-03   6.619015e-03   1.851666e-02
## 3-104771     6.936246e-03  -1.138590e-02   2.486145e-03  -2.622324e-02
## 3-104784     2.587536e-02  -5.439089e-03   1.747763e-03  -2.667657e-02
## 3-104828     6.347692e-03  -9.026496e-03  -2.913182e-03  -3.210899e-02
## 3-104843     2.646354e-02  -5.968458e-03   1.843993e-03  -2.846543e-02
## 3-104881     3.410186e-02   2.448240e-02   2.071107e-02  -5.522951e-03
## 3-104902     -4.883845e-03   3.756223e-03   1.742689e-02   6.052545e-03
## 3-104903     -2.116662e-02   5.082783e-02   2.408333e-02   8.269067e-03
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## 3-105017     -3.470629e-03   1.298987e-02  -3.000895e-02  -2.673151e-03
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## 3-105053     2.457053e-03  -2.137852e-02  -4.547365e-02  -3.049010e-03
## 3-105106     -2.294047e-02   5.540726e-03   8.124734e-03   1.947322e-02

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## 3-105286 1.275480e-01 2.807669e-02 -1.832917e-02 7.346669e-02
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## 3-105485 3.530444e-02 5.388155e-03 -3.074751e-03 1.392961e-02
## 3-105488 -7.462100e-03 -2.036054e-02 2.386928e-02 -2.390814e-02
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## 3-105753 3.131339e-02 2.817601e-03 2.297118e-03 -2.296495e-02
## 3-105776 3.474103e-02 1.259734e-02 -6.436096e-03 2.383101e-02
## 3-105801 -2.142938e-02 5.254109e-02 -2.762437e-02 -1.291404e-02
## 3-105807 -1.577199e-02 -1.086085e-02 9.562257e-03 -7.164571e-03
## 3-105865 -1.577199e-02 -1.086085e-02 9.562257e-03 -7.164571e-03
## 3-105873 -7.413628e-03 5.616612e-03 2.966742e-02 1.275207e-02
## 3-105902 -3.039777e-02 -1.125584e-02 -8.112452e-02 -1.126112e-02
## 3-105927 -3.906537e-02 7.963171e-02 9.495691e-02 5.099111e-03
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## 3-106120 -2.895845e-02 4.740795e-02 4.411064e-02 1.007102e-02
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## 3-107619 -1.089574e-02 6.904340e-05 1.076974e-04 7.117974e-03
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## 3-121841 8.461766e-03 -6.699571e-03 -2.394622e-03 -2.813528e-02
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## 3-122191 -5.189743e-03 1.743110e-02 2.946223e-02 -5.924420e-03
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## 3-122869 -2.084506e-02 1.852074e-02 -1.264626e-02 9.342248e-03
## 3-122908 -3.586887e-02 -8.249146e-03 -7.481297e-02 -9.209334e-03
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## 3-130072 -5.641566e-03 1.299546e-02 2.762564e-02 -2.462962e-03
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## 3-130541 -1.820629e-02 -7.066909e-03 2.572391e-02 1.705415e-02
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## 3-131715     -3.993994e-02 -1.043223e-04 -5.304990e-03  2.375501e-02
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## 3-131858     -4.589318e-03 -1.269575e-03  1.236777e-03 -1.131407e-02
## 3-132025     -1.327112e-02 -3.847562e-02 -6.710431e-04  2.079548e-02
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## 3-136130 -2.479454e-02 9.047539e-03 1.052297e-02 2.235035e-02
## 3-136175 -8.456483e-03 -2.565011e-02 2.174908e-03 7.931087e-03
## 3-136195 1.791295e-03 -2.322552e-02 -2.121995e-02 -8.574102e-03
## 3-136216 -2.254705e-01 3.102145e-01 -8.477059e-03 1.459899e-02
## 3-136218 -7.832398e-03 1.653977e-02 3.137175e-02 3.641177e-03
## 3-136227 -1.926738e-02 2.971710e-02 1.783421e-02 5.767195e-03
## 3-136321 -6.980407e-03 -3.435250e-02 3.349915e-02 -1.376734e-02
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## 3-137302 1.152778e-02 -1.901530e-02 8.316811e-03 -4.111960e-02
## 3-137335 -7.625568e-03 1.495455e-02 2.885770e-02 4.792334e-03
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| ## 3-138232 | 3.937153e-01 | -3.702478e-02 | 2.339906e-01 | -7.474622e-02 |
| ## 3-138238 | -1.075848e-02 | 3.194635e-02 | 1.120894e-02 | -8.695931e-03 |
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| ## 3-138879 | -3.293040e-02 | -1.056735e-01 | -6.490456e-03 | 5.102266e-02 |
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| ## 3-139555 | 1.216710e-02 | -2.083124e-02 | 1.277594e-04 | -3.183487e-02 |
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## 3-139959    7.166787e-02  1.010085e-04 -1.247151e-02  2.266537e-02
## 3-140015   -3.045391e-02 -1.011404e-02 -6.653882e-02 -7.799641e-03
## 3-140100   -4.131669e-03 -3.105676e-02  2.606636e-02 -1.024506e-02
## 3-140232    1.514337e-01  1.406807e-02 -1.940086e-02  4.757277e-02
## 3-140266    1.840048e-02  8.674414e-03  4.998920e-03 -4.071958e-02
## 3-140337   -1.102540e-02  2.201542e-02 -5.029391e-02 -2.728527e-03
## 3-140364    1.752023e-02 -6.789549e-03 -4.616841e-03 -1.033059e-02
## 3-140369   -7.752737e-03 -5.865467e-02 -3.029246e-03  4.001490e-03
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## 3-140474   -1.562092e-02  4.174501e-02 -5.970770e-02 -1.158731e-02
## 3-140540   -1.571888e-02  2.138495e-02 -6.863596e-02 -4.201649e-03
## 3-140545    4.369532e-02  1.306129e-02 -5.794414e-03  2.583516e-02
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## 3-141425   -1.447033e-02 -5.668571e-02  1.604795e-03  3.057396e-02
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## 3-143782 -1.466024e-02 -9.768611e-03 -3.522681e-02 -7.193194e-03
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## 4-150203 -2.021108e-02 2.887909e-02 5.207107e-03 4.916718e-03
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## 4-150472 2.773960e-02 1.059014e-02 -4.627942e-03 1.247124e-02
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## 4-150504 -1.454603e-02 8.980523e-03 5.229822e-02 2.408618e-02
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## 4-151094 -5.480072e-03 3.767201e-02 2.828489e-02 -1.440412e-02
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## 4-151143 -8.850483e-03 1.930498e-03 2.675781e-02 1.338773e-02
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## 4-151232_2 7.658911e-03 -2.145233e-02 -5.162023e-02 -2.692434e-03
## 4-151243 -8.752216e-03 1.713406e-02 1.099711e-02 2.450785e-03
## 4-151247 -2.925396e-02 -4.001982e-02 3.697194e-02 1.744797e-02
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## 4-153512 -1.699417e-02 -1.928417e-02 -1.290868e-02 9.477703e-03
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## 4-154251 -9.363664e-03 -1.030919e-02 2.642590e-02 -3.695885e-02
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## 4-154260 -1.573181e-02 4.409600e-03 5.852450e-03 1.382251e-02
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## 4-154579 -2.699358e-02 6.237206e-02 3.002977e-02 1.189425e-02
## 4-154585 -2.797283e-02 -1.193072e-02 2.853938e-02 2.507444e-02
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## 4-155084 -2.583149e-02 3.519314e-02 3.952625e-02 1.518222e-02
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## 4-155355 -9.435957e-03 -2.506632e-02 -3.592469e-03 8.143944e-03
## 4-155388 1.006038e-01 2.713721e-02 -1.312343e-02 6.102403e-02
## 4-155394 2.677615e-02 -2.410337e-03 -7.925412e-04 -6.121223e-03

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## 4-155607      -1.956562e-02  1.212717e-02  1.564479e-02  1.917393e-02
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## 4-155767      -1.981285e-02 -3.014714e-04  2.183152e-02  1.356580e-02
## 4-155771       5.619020e-02  1.693978e-02  2.567225e-02 -1.773048e-02
## 4-155773       4.432178e-02  1.480226e-02 -7.229983e-03  3.349926e-02
## 4-155834      -2.519066e-02 -8.317938e-03  3.411421e-02  1.166662e-02
## 4-155843      -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-155856       1.006038e-01  2.713721e-02 -1.312343e-02  6.102403e-02
## 4-155862      -4.128250e-01  6.253213e-02 -1.503045e-01  7.884294e-02
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## 4-156027      -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-156088      -2.556898e-02 -1.325899e-02  2.424700e-02  1.954554e-02
## 4-156101       2.787824e-02  2.676364e-03 -3.147824e-03  7.801420e-03
## 4-156138      -1.981285e-02 -3.014714e-04  2.183152e-02  1.356580e-02
## 4-156144       4.488119e-03 -2.050649e-02  3.821522e-02 -1.837924e-02
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## 4-156228       3.712929e-02  1.974227e-02  3.457545e-03 -5.672189e-02
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## 4-156391      -3.493817e-03 -5.987642e-02  7.398421e-02 -2.919984e-02
## 4-156413      -2.050481e-02 -2.812391e-04  2.258314e-02  1.402772e-02
## 4-156423       4.174569e-03 -1.429174e-02 -4.017162e-02 -1.533541e-03
## 4-156433      -3.733772e-02 -2.016677e-02 -7.791341e-02 -7.076330e-03
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## 4-156646      -1.207198e-02 -6.683785e-03  1.850328e-02 -3.604439e-02
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## 4-156809       1.008190e-01 -2.068154e-02 -1.886583e-02 -5.172359e-02
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## 4-157728 -1.578557e-02 7.848479e-03 3.177668e-02 1.121138e-02
## 4-157755 1.333049e-02 2.661114e-03 4.184909e-03 -2.797226e-02
## 4-157798 -2.210711e-02 -4.296969e-02 -1.161047e-02 1.292616e-02
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## 4-159839     -1.796947e-02 -5.323508e-03 -4.757463e-02 -6.630798e-03
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## 4-161327 -1.796947e-02 -5.323508e-03 -4.757463e-02 -6.630798e-03
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## 4-161565 -7.190987e-03 -1.258632e-02 2.314824e-02 -2.716698e-02
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## 4-164242 5.544727e-02 1.522624e-02 7.101537e-03 -7.860975e-02
## 4-164264 3.399183e-02 1.778719e-02 1.967999e-02 8.495946e-03
## 4-164268 -1.333986e-02 5.339634e-03 1.357164e-02 1.440022e-02
## 4-164308 -3.098028e-02 -1.078306e-02 3.228794e-02 2.600428e-02
## 4-164314 -1.794175e-02 3.166912e-02 -3.516362e-02 -8.069551e-03
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## 4-164518 -1.160052e-02 3.616576e-02 5.737972e-02 -4.797577e-03
## 4-164595 1.782218e-01 4.666613e-02 -2.590621e-02 1.140172e-01
## 4-164628 -1.159160e-02 1.739926e-02 -5.319010e-02 -6.288976e-03
## 4-164678 -1.525130e-02 3.546567e-02 2.347193e-02 -9.222496e-04
## 4-164736 -1.942329e-02 3.541645e-04 -2.665804e-02 3.751452e-03
## 4-164749 -1.960348e-02 3.243028e-02 -4.085223e-02 -8.114880e-03

```

| | | | | |
|-------------|---------------|---------------|---------------|---------------|
| ## 4-164813 | 3.068624e-02 | 9.284055e-03 | 3.545433e-03 | -5.046027e-02 |
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| ## 4-164995 | 2.471651e-02 | 7.753949e-03 | 2.836466e-03 | -3.268761e-02 |
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| ## 4-165086 | -1.353912e-02 | -7.427320e-02 | 1.183428e-02 | 3.857219e-02 |
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| ## 4-165132 | -2.082802e-02 | -4.103390e-02 | -1.158661e-02 | 1.541554e-02 |
| ## 4-165136 | -2.159728e-03 | 9.807784e-03 | -2.207079e-02 | -2.129229e-03 |
| ## 4-165163 | 7.976184e-02 | 2.940363e-02 | -1.087386e-02 | 6.357178e-02 |
| ## 4-165201 | -6.936020e-03 | -2.645741e-03 | 1.368625e-02 | 4.073091e-03 |
| ## 4-165286 | -1.227723e-02 | 6.409303e-03 | -3.514966e-02 | -3.880608e-03 |
| ## 4-165342 | 3.333671e-02 | -1.055912e-02 | 5.417207e-03 | -3.411507e-02 |
| ## 4-165427 | 1.391213e-01 | 2.791352e-02 | -1.550589e-02 | 7.319290e-02 |
| ## 4-165451 | -1.103323e-02 | 2.911828e-02 | -2.148893e-02 | -4.862039e-03 |
| ## 4-165500 | -1.364792e-02 | 5.228927e-03 | 1.406347e-02 | 1.468787e-02 |
| ## 4-165574 | 4.151879e-02 | -1.151169e-02 | 5.425331e-03 | -3.398928e-02 |
| ## 4-165647 | -2.699358e-02 | 6.237206e-02 | 3.002977e-02 | 1.189425e-02 |
| ## 4-165697 | -1.185650e-02 | -7.270326e-02 | -3.176278e-02 | -3.089471e-03 |
| ## 4-165698 | -5.452837e-03 | 9.128489e-03 | -7.122357e-02 | -7.163771e-03 |
| ## 4-165840 | -4.092988e-02 | 2.657855e-02 | -1.471058e-01 | -2.265383e-02 |
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| ## 4-166108 | 5.171045e-02 | 1.022026e-02 | -7.665894e-03 | 2.512058e-02 |
| ## 4-166180 | -3.564135e-03 | -2.145423e-02 | 2.333246e-02 | 7.833570e-04 |
| ## 4-166205 | -3.034530e-02 | -1.429237e-02 | 3.328037e-02 | 2.088425e-02 |
| ## 4-166208 | -1.103323e-02 | 2.911828e-02 | -2.148893e-02 | -4.862039e-03 |
| ## 4-166218 | 4.085949e-02 | 1.585709e-02 | 4.576034e-03 | -6.489105e-02 |
| ## 4-166252 | -2.244795e-02 | 7.418643e-03 | 1.784755e-02 | 2.158888e-02 |
| ## 4-166270 | -8.410088e-03 | 1.902034e-02 | -2.006613e-02 | -1.736527e-03 |
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| ## 4-166340 | -2.078278e-02 | 2.870441e-02 | 1.341345e-02 | 3.193699e-03 |
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| ## 4-166478 | -1.036628e-02 | -5.707268e-02 | 8.951317e-03 | 3.238292e-02 |
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| ## 4-166710 | -1.322925e-02 | -1.863684e-02 | -8.544277e-03 | 5.432236e-03 |
| ## 4-166726 | -4.533124e-03 | -1.827753e-03 | 2.521995e-02 | 1.125667e-02 |
| ## 4-166750 | -1.303480e-02 | 2.427870e-02 | -2.667350e-02 | -4.862929e-03 |
| ## 4-166754 | -2.803699e-02 | 6.457327e-02 | 3.073387e-02 | 1.244376e-02 |
| ## 4-166834 | -1.007139e-02 | 1.248680e-02 | 3.148532e-02 | 3.291078e-03 |
| ## 4-166835 | 2.654763e-02 | -5.102969e-03 | 3.843697e-03 | -4.042610e-02 |
| ## 4-166859 | 4.873421e-02 | -7.225349e-04 | -7.469665e-03 | -9.203057e-04 |
| ## 4-166871 | -5.526621e-03 | 1.279984e-02 | 2.312200e-02 | -3.488505e-03 |
| ## 4-166884 | -1.111223e-02 | 2.849180e-02 | 2.385284e-02 | 1.917249e-04 |
| ## 4-166887 | -5.151517e-03 | 1.191067e-02 | 2.993598e-02 | 6.487378e-03 |
| ## 4-166899 | -4.664960e-03 | -3.503431e-03 | 2.724379e-02 | 1.126254e-02 |

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## 4-166922 -2.333068e-02 5.385028e-02 2.590627e-02 1.104929e-02
## 4-166933 4.634351e-03 1.193013e-02 2.240923e-03 -1.626364e-02
## 4-167061 -1.525130e-02 3.546567e-02 2.347193e-02 -9.222496e-04
## 4-167076 -5.138666e-03 1.171419e-02 2.900457e-02 6.551193e-03
## 4-167077 -1.908344e-02 -1.290218e-01 1.677012e-02 7.471259e-02
## 4-167092 3.935404e-02 1.537242e-02 4.723495e-03 -6.582923e-02
## 4-167109 2.521779e-02 -2.306658e-02 2.430247e-02 -3.832596e-02
## 4-167174 -3.282997e-02 6.170215e-03 3.794576e-02 2.835820e-02
## 4-167192 -1.194867e-02 -5.034799e-03 -3.245493e-02 -2.987241e-03
## 4-167221 7.066811e-02 1.118120e-03 -3.441401e-03 -1.496166e-02
## 4-167222 -1.683500e-03 -4.376664e-02 6.070851e-03 1.654881e-03
## 4-167225 3.678238e-02 6.226983e-03 -1.575018e-04 -1.707023e-02
## 4-167283 -1.912091e-02 1.157351e-03 -6.069989e-02 -7.819315e-03
## 4-167334 -2.336036e-02 -5.022560e-03 -8.492964e-04 1.113488e-02
## 4-167377 -1.040811e-02 1.590072e-02 2.051289e-02 1.065059e-02
## 4-167382 5.370259e-02 1.205015e-02 -2.221979e-03 1.276967e-02
## 4-167418 -1.322925e-02 -1.863684e-02 -8.544277e-03 5.432236e-03
## 4-167521 1.718759e-01 3.936588e-02 -2.321275e-02 1.031503e-01
## 4-167576 -1.230616e-02 1.980416e-02 4.874890e-02 6.966536e-03
## 4-167577 1.293064e-02 7.321830e-03 3.282310e-03 -3.841417e-02
## 4-167610 -7.868345e-03 5.266462e-02 2.823582e-02 -2.495801e-02
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## 4-167774 1.903462e-02 9.325930e-03 -4.266195e-03 -1.059480e-03
## 4-167774_2 -1.749341e-02 -3.804210e-02 -8.816280e-03 1.371232e-02
## 4-167780 -1.726848e-02 1.713661e-02 -3.932235e-03 6.027447e-03
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## 4-167884 4.080055e-03 -2.459338e-02 -2.229368e-02 -1.141439e-02
## 4-167909 1.052509e-01 2.665625e-02 -1.443696e-02 6.479326e-02
## 4-167910 3.665819e-02 4.761159e-03 3.600417e-04 -1.526471e-02
## 4-167926 1.173276e-02 -9.166355e-03 -9.699602e-04 -2.519064e-02
## 4-167957 -1.608034e-02 4.000601e-02 -3.090026e-02 -6.752525e-03
## 4-168008 2.806343e-02 7.112967e-03 -2.167403e-03 6.081532e-03
## 4-168086 -3.981744e-03 -2.945947e-02 3.853544e-03 5.783149e-03
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## 4-168125 -2.892041e-02 -1.229685e-02 3.356414e-02 2.165169e-02
## 4-168128 -2.210215e-02 -1.282078e-02 1.086199e-02 8.787074e-03
## 4-168139 -8.455387e-03 -3.728025e-02 5.905943e-03 2.062091e-02
## 4-168147 -3.173046e-02 7.428356e-02 3.783800e-02 1.112928e-02
## 4-168243 -1.001350e-02 2.314031e-02 1.906052e-02 4.536497e-04
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## 4-168318 -2.014341e-02 -1.037133e-02 2.266709e-02 -3.149682e-02
## 4-168373 -2.228301e-02 3.883472e-02 8.407773e-02 7.415957e-03
## 4-168454 -3.716492e-02 -1.214716e-03 -6.127150e-03 2.246067e-02
## 4-168479 8.301810e-02 1.072622e-02 2.405898e-03 -2.932351e-02
## 4-168480 -3.632765e-02 -4.905277e-02 -4.979393e-02 1.286147e-02
## 4-168508 1.059348e-02 -2.161901e-02 8.872803e-03 -5.143332e-02
## 4-168614 4.057650e-03 -1.674062e-02 2.846778e-02 -1.185915e-02
## 4-168654 -1.267582e-02 -1.074905e-01 1.648749e-02 5.592415e-02
## 4-168708 -1.500070e-02 -4.799891e-03 -3.878567e-02 -4.755763e-03
## 4-168888 -1.500070e-02 -4.799891e-03 -3.878567e-02 -4.755763e-03
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## 4-169108   -1.482880e-02   1.784975e-02  -8.781670e-02 -8.395964e-03
## 4-169121   -3.981744e-03 -2.945947e-02   3.853544e-03  5.783149e-03
## 4-169142   -1.190721e-02 -3.152460e-02  -4.333218e-03  9.215723e-03
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## 4-169481   -1.097398e-02  1.468655e-02  -4.216133e-02 -3.909253e-03
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## 4-169547   -1.766941e-02  4.035664e-02   2.448156e-02 -1.044070e-03
## 4-169602   4.523585e-02  1.191483e-02  -3.944481e-03  2.161284e-02
## 4-169630   7.468499e-03 -4.913711e-04  -2.198678e-03 -2.515292e-02
## 4-169668   -1.889558e-02  3.019917e-02   5.662780e-02  1.883912e-03
## 4-169669   1.434206e-02 -2.212040e-02  -1.271272e-03 -6.529837e-02
## 4-169702   -3.963093e-02  2.739311e-02  -7.182658e-05  2.408170e-02
## 4-169722   3.928236e-04  4.357305e-02   1.373193e-02 -3.487265e-02
## 4-169909   5.085072e-02  1.644415e-02   1.216918e-02 -7.141630e-02
## 4-169931   2.782245e-02 -2.430929e-03  -3.972481e-03  5.073346e-03
## 4-169939   -3.933232e-03  6.116540e-03   1.827550e-02  4.462333e-03
## 4-170029   2.242537e-03  3.806554e-02   7.021488e-03 -3.350638e-02
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## 4-170066   -1.943640e-02  3.127595e-02   5.764483e-02  1.817038e-03
## 4-170228   7.631063e-02  3.039656e-02   1.388773e-03 -7.822607e-02
## 4-170232   -2.400365e-02  1.009103e-02  -1.906016e-02  5.828376e-03
## 4-170328   -1.466577e-02 -8.593558e-03   7.663057e-03 -1.064565e-02
## 4-170335   -6.818726e-03 -4.762822e-03  -3.145021e-02 -6.678784e-04
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## 4-170553   -1.655473e-02  3.234366e-02  -3.164550e-02 -6.212839e-03
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## 4-170688   -8.001230e-03 -2.839898e-03  -4.591886e-02 -4.801726e-03
## 4-170718   -2.570847e-02 -1.219178e-02  -7.907697e-02 -9.452925e-03
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## 4-170867   -1.821615e-02  3.592139e-02  -4.812361e-02 -1.097960e-02
## 4-170944   -3.019015e-03 -3.059163e-02   4.485839e-03  4.671728e-03
## 4-170985   4.729213e-03 -1.910865e-02  -2.254070e-02 -1.177546e-02
## 4-170987   -4.224171e-03 -2.192451e-03  -7.853511e-02 -4.924967e-03
## 4-171052   -3.110811e-02 -5.981113e-02  -2.251512e-02  2.553647e-02
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## 4-171295    -3.019015e-03 -3.059163e-02  4.485839e-03  4.671728e-03
## 4-171296    4.018492e-03 -1.543175e-02  2.658652e-02 -1.181926e-02
## 4-171307    -2.390416e-02  8.363296e-03  1.366431e-02  2.307895e-02
## 4-171348    -3.142422e-02 -6.058251e-02 -2.267628e-02  2.585482e-02
## 4-171519    4.729213e-03 -1.910865e-02 -2.254070e-02 -1.177546e-02
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## 4-171576    4.365671e-02  7.294783e-02  3.401077e-02 -2.873204e-02
## 4-171584    -9.359728e-03 -2.504498e-02  4.806049e-02 -4.346988e-02
## 4-171597    6.708012e-02  8.130187e-03 -9.204170e-03  3.107228e-02
## 4-171664    -9.647154e-03 -2.621300e-02  4.896865e-02 -4.382441e-02
## 4-171677    -5.618077e-03  1.508254e-02  2.451672e-02  4.545157e-05
## 4-171708    5.289120e-02  1.981163e-02  6.187889e-03 -8.344825e-02
## 4-171742    6.359942e-02 -7.107904e-04  1.252773e-03 -1.476627e-02
## 4-171751    -7.834425e-03 -6.505171e-02  9.775317e-03  3.664724e-02
## 4-171763    -1.330017e-02  3.631058e-02  3.075652e-02 -1.425761e-03
## 4-171767    3.930339e-02  1.094410e-02 -3.449128e-03  1.920448e-02
## 4-171845    -2.797275e-02 -1.089472e-02 -7.719384e-02 -1.105754e-02
## 4-171847    -1.062514e-02  1.410621e-02  2.701351e-02  5.914786e-03
## 4-171908    7.503456e-02  1.510902e-01  3.590638e-02  6.029754e-02
## 4-171909    -1.710659e-02  2.673794e-02  5.276342e-02  8.211927e-03
## 4-171921    -1.078464e-03  2.419830e-02  1.057699e-02 -1.510689e-02
## 4-171957    -1.261719e-02  3.325937e-02 -2.413776e-02 -5.991016e-03
## 4-171977    1.190104e-02 -3.282639e-03  1.839010e-02  9.712827e-03
## 4-172017    -1.071711e-02  2.845117e-02 -2.029200e-02 -4.881648e-03
## 4-172025    -3.050562e-02  7.105485e-02  3.719261e-02  1.159319e-02
## 4-172094    -7.418086e-03  1.669166e-02  2.920256e-02  2.053895e-03
## 4-172209    -9.742583e-03  1.290962e-02  2.651994e-02  5.178613e-03
## 4-172263    5.004714e-02  8.368209e-03 -6.767801e-03  2.477895e-02
## 4-172276    -1.140001e-02 -2.482826e-02  2.362049e-02 -5.159422e-03
## 4-172280    8.874108e-02  1.257453e-02 -9.956715e-03  3.632138e-02
## 4-172298    -3.043140e-02 -5.757436e-02 -2.101839e-02  2.111500e-02
## 4-172448    -9.942677e-03 -8.682369e-02  1.247880e-02  4.726405e-02
## 4-172479    2.208464e-02  1.231352e-02  5.592248e-03 -5.939182e-02
## 4-172487    -1.669448e-02  2.127359e-03  2.443382e-02  2.375330e-02
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## 4-172866    -1.761884e-02  3.078983e-02 -5.678664e-02 -8.331050e-03
## 4-172925    9.543697e-02  1.366981e-02 -1.258632e-02  4.726675e-02
## 4-172931    6.274805e-03 -9.656436e-02 -1.692814e-02 -2.001834e-02
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## 4-173047    -1.745280e-02 -4.707734e-03  6.891772e-03 -9.267817e-03
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## 4-173098    5.256194e-02 -3.123762e-02  1.323242e-04 -1.029194e-01
## 4-173136    -5.528834e-03 -2.009634e-02  3.797004e-02 -2.759456e-02
## 4-173211    -3.469776e-02 -7.081981e-03 -3.174261e-02  8.237450e-03
## 4-173215    1.097628e-01  4.659700e-02 -1.697333e-02  9.526231e-02
## 4-173320    1.066106e-02  2.840909e-02 -6.157196e-04 -3.570655e-02
## 4-173390    5.218225e-02  7.348636e-03 -6.567294e-03  2.759773e-02
## 4-173433    -3.453197e-03  1.075062e-02 -2.293673e-02 -1.557182e-03

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## 4-173481    -2.303555e-02   1.426405e-02 -1.347596e-02  9.124755e-03
## 4-173490    -1.283373e-02  -3.652136e-02  3.531835e-02 -6.887637e-03
## 4-173490_2  -3.164933e-02  9.375199e-03  1.134951e-02  2.661814e-02
## 4-173549    -1.437501e-02  8.267214e-03  1.732108e-02  1.538610e-02
## 4-173603    -2.773385e-02  -2.035531e-02 -3.822431e-02  8.002971e-03
## 4-173617    -3.453197e-03   1.075062e-02 -2.293673e-02 -1.557182e-03
## 4-173671    -6.590209e-02  -2.716642e-02 -7.700611e-02  1.469366e-02
## 4-173671_2 -1.845076e-02  -1.331962e-02 -3.105380e-02 -1.204951e-02
## 4-173703    -3.362838e-02  -9.564314e-03 -8.355033e-02 -1.042704e-02
## 4-173727    -8.387116e-03  -1.969047e-02  2.988469e-02  4.098138e-03
## 4-173885    -2.443478e-01   1.996063e-01  1.506115e-01 -5.003870e-02
## 4-173932    -4.801672e-03   1.187940e-02  -2.337129e-02 -4.032142e-03
## 4-173975    -3.564024e-02   1.987034e-04  -3.019187e-02  1.586957e-02
## 4-173978    4.472001e-02   1.605479e-02  -9.502576e-03  2.293914e-02
## 4-173991    -1.690424e-02  -6.570053e-02  9.528131e-02 -3.772645e-02
## 4-174102    -9.118496e-03   1.297203e-02  3.202188e-02  8.139727e-03
## 4-174144    -1.312953e-02   1.457831e-02  3.251234e-03  1.409227e-03
## 4-174150    -1.824020e-01  -1.690873e-01 -1.703424e-01 -1.006084e-02
## 4-174152    8.026359e-02   3.504278e-02  -1.234852e-02  7.233093e-02
## 4-174154    -9.888303e-03   1.563271e-02  1.640981e-02  2.403532e-03
## 4-174173    3.372070e-02  -9.284929e-03  1.437376e-03 -2.357293e-02
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## 4-174213    -4.881771e-03  -2.598333e-02  4.404347e-02 -2.931764e-02
## 4-174242    6.890761e-02   1.161832e-02  -8.820513e-03  3.597102e-02
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## 4-174546    -4.134631e-03  -2.936144e-02  4.098294e-03  6.453527e-03
## 4-174573    -1.315530e-02  -2.929460e-02  2.803911e-02 -1.302614e-03
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## 4-174626    -5.065301e-02  -4.913709e-02  6.327645e-02  5.956802e-03
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## 4-175440    -2.444223e-02  -3.481111e-02  -1.805582e-02  1.909244e-02
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## 4-175579 -1.438492e-02 7.749527e-03 5.651339e-03 1.315304e-02
## 4-175582 -2.637043e-02 -1.022065e-02 -7.235536e-02 -1.052046e-02
## 4-175677 -4.442485e-03 1.233275e-02 -2.549646e-02 -1.508055e-03
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## 4-175833 -4.442485e-03 1.233275e-02 -2.549646e-02 -1.508055e-03
## 4-175833_2 -1.426816e-02 -2.808023e-02 -7.058221e-03 9.349349e-03
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## 4-175925 -3.529001e-03 4.144929e-03 -4.689602e-02 -2.032180e-03
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## 4-176004 -3.529001e-03 4.144929e-03 -4.689602e-02 -2.032180e-03
## 4-176038 -1.347315e-02 -1.285024e-02 -3.516572e-02 -1.326989e-02
## 4-176046 2.926838e-01 -6.217775e-02 -7.813930e-02 -4.314412e-02
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## 4-176467 2.992470e-02 -2.883836e-02 -3.074922e-03 -8.411819e-02
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## 4-176669 5.659438e-01 7.596707e-02 -3.333074e-02 -8.544292e-02
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## 4-176746 -1.102403e-02 2.722803e-02 4.121953e-02 1.270656e-03
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## 4-176839 2.817521e-02 -6.389745e-03 1.977079e-03 -1.812277e-02
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## 4-177052 -1.258256e-02 1.983896e-02 1.870464e-02 3.020511e-03
## 4-177066 -2.286073e-02 -5.944694e-03 6.823903e-03 7.463418e-03
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## 4-177084 -1.258256e-02 1.983896e-02 1.870464e-02 3.020511e-03
## 4-177114 -1.481955e-02 -1.061502e-02 8.250189e-03 -6.924729e-03
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## 4-177227 -3.435467e-02 -1.578201e-03 -9.737852e-02 -1.139188e-02

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## 4-177359      1.047730e-01  2.647868e-02 -2.053720e-03 -2.095327e-03
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## 4-177514      5.454690e-03 -1.531364e-02 -4.312632e-02 -1.613055e-03
## 4-177614      1.186967e-02 -9.506571e-03 -2.690227e-03 -4.387691e-02
## 4-177640      2.163446e-01  4.242201e-02 -2.504453e-02  6.780855e-02
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## 4-177767      1.674346e-02 -1.475155e-02 -4.661547e-03 -5.891548e-02
## 4-177776     -4.840659e-02  6.522086e-02 -1.552590e-01 -1.608705e-02
## 4-177803     -2.282579e-02 -1.083567e-02 -6.557667e-02 -9.208145e-03
## 4-177808     -1.578996e-02 -1.296240e-02   1.930545e-02  1.173135e-02
## 4-177817     -1.448424e-02  4.642031e-03   4.421531e-03  1.181371e-02
## 4-177826     -1.642044e-02 -2.719030e-02 -9.030547e-03  6.236045e-03
## 4-177952     -2.601853e-02 -3.302182e-03 -5.083821e-02 -2.149533e-03
## 4-177963     -1.495954e-02 -3.692832e-03 -8.973734e-04  5.000392e-03
## 4-178090     -1.153341e-02 -8.089805e-02   1.210318e-02  3.422168e-02
## 4-178103     -7.891799e-02  1.179771e-01 -7.566664e-02 -4.920739e-03
## 4-178136      2.832439e-02 -8.623697e-03 -6.258430e-03 -1.405509e-03
## 4-178146     -1.553830e-02 -2.617452e-02 -8.350020e-03  5.589156e-03
## 4-178184      1.992222e-02 -2.108722e-03   1.482198e-03 -3.370907e-02
## 4-178205     -1.645934e-02  3.766599e-02   2.237786e-02 -9.312168e-04
## 4-178218      1.060063e-02 -1.036281e-02 -4.230047e-03 -4.241604e-02
## 4-178245      9.136018e-03 -9.760127e-03 -4.325161e-03 -4.008391e-02
## 4-178246      1.436168e-01  3.647224e-02 -1.784400e-03 -1.191189e-02
## 4-178289     -4.771262e-03 -5.636790e-02   7.206102e-02 -3.897512e-02
## 4-178301     -1.530446e-02  4.807668e-03   6.657394e-03  1.457813e-02
## 4-178304     -1.553830e-02 -2.617452e-02 -8.350020e-03  5.589156e-03
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## 4-178417      8.133959e-02  6.164990e-03 -6.905298e-03  2.008114e-02
## 4-178505     -1.890167e-02  4.088197e-02 -3.107894e-02 -1.104806e-02
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## 4-178559     -1.669531e-02 -8.525129e-04   1.213996e-02  1.335926e-02
## 4-178577     -1.099074e-02  1.231938e-02 -6.644767e-02 -2.734664e-03
## 4-178625      1.878337e-02 -2.280204e-03   1.707821e-03 -3.101564e-02
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## 4-178854     -1.442795e-02 -6.542611e-03   1.365867e-02 -2.351608e-02
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## 4-178989     -2.777646e-02 -2.357482e-02   2.159131e-02 -4.319090e-03
## 4-179015     -1.535190e-02 -6.395535e-03 -4.256918e-02 -6.388490e-03
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## 4-179072      3.862684e-02  9.984006e-03 -4.384954e-03 -1.048228e-02
## 4-179082     -1.847587e-02  1.186003e-03   2.347539e-02  1.895099e-02
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## 4-179186 8.282918e-03 -8.759768e-03 -3.655209e-03 -3.819268e-02
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## 4-179286 -2.579258e-02 5.228990e-02 7.966446e-02 2.450484e-03
## 4-179294 2.749521e-02 1.164490e-02 7.766881e-03 -4.588935e-02
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## 4-179388 2.954087e-02 6.157969e-03 1.186361e-04 2.893218e-04
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## 4-180848 1.951298e-02 -7.133592e-04 1.252134e-03 -3.482477e-02
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## 4-184034 2.730307e-02 1.803524e-02 -1.027372e-02 1.496808e-02
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| ## 4-190642 | 1.648288e-02 | 2.121948e-02 | 8.648458e-03 | -3.615708e-02 |

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| ## 5-205593 | -5.947387e-03 | -3.806046e-02 | 5.144720e-02 | -2.705793e-02 |
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| ## 5-208416 | -1.092911e-02 | -5.070247e-03 | 4.772003e-03 | 5.332653e-03 |
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| ## 5-209538 | 2.735179e-02 | -1.118013e-02 | 1.746248e-03 | -2.760005e-02 |
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## 5-214104     -1.246817e-02  2.415345e-02  4.037039e-02 -2.809115e-03
## 5-214110     -8.228087e-02  1.171761e-01 -2.157239e-01 -3.493138e-02
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## 5-214375     -1.282495e-02 -1.184069e-02 -3.529701e-02 -1.219960e-02
## 5-214378      8.343502e-03 -4.982278e-03 -1.372175e-02 -5.626531e-03
## 5-214435      4.041422e-02  5.050116e-03  8.446822e-04  4.413754e-04
## 5-214489      1.054297e-01  1.841724e-02 -1.360594e-02  5.364618e-02
## 5-214558     -2.831321e-02 -2.504721e-02  3.226984e-02  1.437857e-02
## 5-214597     -1.475003e-02 -1.207762e-02 -3.935287e-02 -1.214749e-02
## 5-214631     -9.226066e-03 -7.598237e-03 -3.542850e-02 -3.751673e-03
## 5-214638     -2.514151e-02 -3.228013e-02 -1.719135e-02  1.463658e-02
## 5-214657     -2.831321e-02 -2.504721e-02  3.226984e-02  1.437857e-02
## 5-214682     -5.877074e-03 -7.129940e-02 -2.017846e-02  5.898718e-04
## 5-214756      3.896120e-02  7.601441e-03 -2.380350e-03  1.306411e-02
## 5-214791     -2.514151e-02 -3.228013e-02 -1.719135e-02  1.463658e-02
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## 5-214867     -1.641912e-02  4.084377e-02 -3.516255e-02 -5.106949e-03
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## 5-214961      3.871803e-03 -1.184540e-02 -5.200078e-02 -2.961850e-03
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## 5-215099      8.202433e-02  2.698240e-02 -1.134118e-02  6.106902e-02
## 5-215104     -7.735962e-03 -1.081967e-01  1.216570e-02  1.199571e-02
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| ## 5-216422 | -8.370909e-03 | -2.938411e-02 | 5.338687e-03 | 2.030961e-02 |
| ## 5-216424 | 2.021592e-02 | -1.128968e-02 | 4.246451e-03 | -7.285420e-04 |
| ## 5-216444 | -2.653152e-02 | -1.220798e-02 | -7.584418e-02 | -1.091130e-02 |
| ## 5-216453 | 4.601488e-02 | -1.070578e-02 | 6.180090e-03 | -3.786294e-02 |
| ## 5-216455 | -1.779857e-02 | -1.268570e-01 | 1.625085e-02 | 7.322325e-02 |
| ## 5-216487 | -1.256972e-02 | -1.994427e-03 | 2.085824e-03 | -1.556008e-02 |
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## 5-218018 6.501169e-02 1.849945e-02 -1.002679e-02 4.050679e-02
## 5-218020 -6.774116e-03 1.178307e-02 2.578725e-02 4.629361e-04
## 5-218033 -1.222529e-02 2.667636e-02 -3.276128e-02 -7.286794e-03
## 5-218035 -2.103939e-02 -5.313363e-04 2.337230e-02 1.448979e-02
## 5-218217 -2.198233e-02 -4.098855e-04 2.384646e-02 1.542882e-02
## 5-218279 -1.225357e-02 -2.682426e-02 -1.282552e-02 5.596439e-03
## 5-218312 -1.225357e-02 -2.682426e-02 -1.282552e-02 5.596439e-03
## 5-218318 -3.200597e-02 -1.156838e-02 -8.539437e-02 -1.095994e-02
## 5-218379 -3.313170e-02 -1.168831e-02 -8.767647e-02 -1.061583e-02
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## 5-219186 1.078584e-01 -2.346947e-04 9.389854e-03 -1.547801e-01
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## 5-221199 -1.522541e-02 1.261038e-02 1.384594e-02 1.147414e-02
## 5-221199_2 3.311641e-02 -5.628083e-03 4.018699e-03 -3.305150e-02
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## 5-221235 3.311641e-02 -5.628083e-03 4.018699e-03 -3.305150e-02
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## 5-221589 -9.767420e-03 -2.110348e-02 1.964198e-02 -1.355741e-02
## 5-221677 -6.615855e-03 -8.231509e-03 1.566771e-02 -1.151594e-02
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## 5-221721 -1.690643e-02 4.465934e-02 3.215028e-02 -1.165278e-03
## 5-221766 -1.899024e-03 -8.604657e-03 -4.367430e-02 -3.194550e-03
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| | | | | |
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| ## 5-222130 | -9.685840e-03 | -3.413288e-03 | 1.459661e-02 | 8.919910e-03 |
| ## 5-222156 | -1.398297e-02 | 3.616877e-03 | 8.636609e-03 | 1.414670e-02 |
| ## 5-222193 | 5.496916e-02 | 1.233068e-02 | -3.122554e-03 | 1.726467e-02 |
| ## 5-222375 | -2.890149e-02 | -2.967206e-03 | -6.826021e-03 | 1.745431e-02 |
| ## 5-222390 | -2.834482e-03 | -5.129446e-02 | -2.872603e-02 | -1.565504e-02 |
| ## 5-222414 | 1.795148e-02 | 1.451198e-02 | -8.075829e-03 | -9.546129e-04 |
| ## 5-222437 | 5.759759e-03 | -9.343963e-03 | -1.121632e-03 | -2.887887e-02 |
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| ## 5-222780 | -1.221556e-02 | 2.435374e-02 | -2.777440e-02 | -5.591243e-03 |
| ## 5-222825 | -2.198233e-02 | -4.098855e-04 | 2.384646e-02 | 1.542882e-02 |
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| ## 5-222948 | -9.429313e-03 | -3.783161e-02 | 6.930027e-03 | 2.409713e-02 |
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| ## 5-223119 | 2.047121e-02 | 1.532268e-02 | -7.389175e-03 | 9.062946e-05 |
| ## 5-223120 | -2.761030e-02 | 1.827570e-02 | 2.574283e-02 | 2.319053e-02 |
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| ## 5-223254 | -2.318531e-02 | -1.646858e-02 | 1.841362e-02 | 1.225402e-02 |
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| ## 5-223983 | 2.331194e-01 | 2.595088e-01 | -1.783946e-02 | -7.593715e-02 |
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| ## 5-224028 | -1.280752e-03 | 1.310500e-03 | -2.977749e-02 | -1.842377e-03 |
| ## 5-224044 | 1.069641e-01 | 2.665835e-02 | 6.822020e-03 | -9.914363e-02 |
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| ## 5-224106 | -1.924470e-02 | 1.412294e-03 | -1.522746e-03 | 1.051786e-02 |
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## 5-224595 -8.753767e-03 5.975623e-02 6.635902e-02 -2.282685e-02
## 5-224632 -1.045731e-02 2.546691e-02 -2.581904e-02 -2.304416e-03
## 5-224648 2.934256e-02 6.455210e-03 -7.434141e-04 5.145670e-03
## 5-224731 -5.702622e-02 4.180891e-02 5.388437e-02 5.150481e-02
## 5-224732 -5.430950e-03 -2.042616e-02 -4.605468e-02 -6.540602e-03
## 5-224742 -1.976814e-03 3.924589e-03 -3.061108e-02 -1.659800e-03
## 5-224757 2.151051e-02 -4.974936e-03 3.305525e-03 -2.266530e-02
## 5-224759 -1.202441e-03 -9.617383e-03 1.994130e-02 8.791488e-04
## 5-224785 2.719928e-03 -1.000294e-02 2.224883e-03 -2.686700e-02
## 5-224809 -2.775253e-02 -1.556659e-02 4.556306e-02 -3.043365e-02
## 5-224816 8.554206e-04 -3.588149e-02 -1.464716e-02 -7.961184e-03
## 5-224819 -2.089639e-02 -8.172252e-03 -5.619076e-02 -7.151353e-03
## 5-224834 -2.131260e-02 3.167973e-02 -5.595478e-02 -1.291438e-02
## 5-224835 -1.842541e-02 -9.911193e-03 2.754977e-02 -3.567408e-02
## 5-224846 1.087746e-01 -1.109537e-02 -1.139505e-02 -1.633206e-02
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## 5-225007 -1.880435e-01 2.547436e-01 7.373504e-02 -5.487300e-02
## 5-225019 -3.519541e-02 -1.114786e-01 1.405740e-01 -3.740708e-02
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## 5-226111 -1.150171e-02 9.547600e-03 2.114372e-02 5.792397e-03
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## 5-226715 -3.231619e-03 6.410342e-03 -3.167822e-02 -1.918824e-03
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## 5-228257 6.793306e-02 2.276371e-02 7.276804e-03 -8.313708e-02
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## 5-230139 -5.109879e-02 -1.139453e-02 -1.225579e-01 -1.402720e-02
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| ## 5-235293 | -1.141357e-02 | 1.368728e-02 | 3.188486e-02 | 9.959452e-03 |
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| ## 5-235371 | -5.413644e-03 | 1.238147e-02 | 2.312252e-02 | -2.459392e-03 |
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| ## 5-236696 | 3.250977e-02 | 1.047985e-02 | 7.115191e-03 | -5.895091e-02 |
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## 5-238779      1.387733e-02 -2.155671e-02 -3.682388e-02 -2.376411e-02
## 5-238798      -1.934449e-02  2.249299e-02  2.373791e-02  1.359545e-02
## 5-238927      -1.323995e-02  3.905869e-02  4.267491e-02 -4.313491e-03
## 5-239049      -3.716375e-02 -1.836717e-02  4.730593e-02  1.032986e-02
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## 5-239445      7.523676e-03 -7.076782e-03 -2.071162e-03 -3.666003e-02
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## 5-240652      3.751480e-02 -6.358435e-02 -6.256236e-02 -6.869584e-02
## 5-240702      -1.295509e-03  4.220217e-02  5.412868e-02 -2.400152e-02
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| ## 5-243317 | -1.568456e-02 | 3.246559e-03 | 4.728201e-03 | 1.274105e-02 |
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| ## 5-243404 | 9.649222e-02 | 1.135764e-01 | 2.667516e-02 | 1.398389e-01 |
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| ## 5-243560 | 2.999104e-02 | -4.095573e-03 | -1.687273e-03 | -7.680906e-03 |
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## 5-247899    2.428466e-02  8.472823e-03  1.207943e-03 -3.022982e-02
## 5-247989   -1.255580e-02 -5.581703e-02 -4.456248e-03  1.625749e-02
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## 6-251281 -1.548881e-02 -4.146883e-02 3.914992e-03 3.195960e-02
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## 6-251319 -3.248683e-02 -1.215753e-02 -7.225708e-02 -1.599734e-02
## 6-251324 9.036857e-02 3.332936e-02 -1.096706e-02 5.965171e-02
## 6-251357 2.177592e-02 9.443148e-03 -2.969509e-03 -4.555223e-04
## 6-251411 8.610960e-02 1.456255e-02 -1.617406e-03 1.652543e-02
## 6-251427 -1.214215e-02 1.045595e-02 1.248363e-02 9.021607e-03
## 6-251490 -6.114038e-03 -7.634551e-04 7.817637e-04 -1.217058e-02
## 6-251583 -3.486621e-02 8.147322e-02 4.443226e-02 1.018707e-02
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## 6-251684 -2.383852e-02 -8.608572e-03 -6.331046e-02 -9.407296e-03
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## 6-251903 -4.011633e-02 -1.978055e-02 1.457176e-02 2.354837e-02
## 6-251953 -2.222438e-03 -8.730860e-03 1.830015e-02 1.586020e-03
## 6-251955 6.069890e-02 9.014422e-03 -8.163948e-03 2.900342e-02
## 6-251979 -1.060214e-02 2.305233e-02 -2.658240e-02 -5.338924e-03
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## 6-252152 -1.482644e-02 9.461738e-03 9.904323e-03 1.528420e-02
## 6-252156 -4.095188e-02 -2.131657e-02 1.605708e-02 2.316014e-02
## 6-252170 7.965774e-02 1.140583e-02 -9.478524e-03 2.376534e-02
## 6-252173 -2.048058e-02 4.632560e-02 2.441055e-02 7.456420e-03
## 6-252173_2 1.889698e-02 1.013897e-02 6.102778e-03 -4.159858e-02
## 6-252236 -1.895398e-02 -2.760483e-03 -4.390829e-02 -6.098994e-03
## 6-252265 3.608373e-02 -2.096940e-02 8.228579e-04 -4.717535e-02
## 6-252338 3.543181e-03 1.770340e-02 6.343893e-03 -1.747223e-02
## 6-252341 -9.341507e-03 -5.157332e-03 -3.402954e-02 -2.964182e-03
## 6-252362 -2.527022e-03 -1.615750e-02 -5.642010e-02 -3.388925e-03
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## 6-252442 2.763459e-02 -3.881019e-03 -4.438325e-03 5.007957e-03
## 6-252579 -1.060214e-02 2.305233e-02 -2.658240e-02 -5.338924e-03
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## 6-252711 -2.804200e-02 9.317424e-04 -5.668370e-03 1.823733e-02
## 6-252726 -1.982119e-02 3.509991e-02 3.072019e-02 6.591132e-03
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## 6-253019 -5.390560e-03 1.522948e-02 7.631812e-03 -1.077995e-02
## 6-253102 -4.922041e-03 1.164088e-02 -4.605095e-02 -1.511257e-03
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## 6-253884 9.277634e-02 1.853729e-02 -1.276418e-02 5.029200e-02
## 6-254007 -3.724060e-02 9.188517e-02 5.263905e-02 1.214840e-02
## 6-254027 -2.592864e-02 -1.874305e-02 3.146120e-02 2.057309e-02
## 6-254038 3.681344e-02 1.310434e-02 -4.334960e-03 2.901836e-02
## 6-254043 4.890255e-03 -1.998455e-02 -2.443600e-02 -1.059944e-02

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## 6-254195   -6.086644e-03 -2.803278e-02  2.506110e-02 -9.076024e-03
## 6-254210    4.329821e-02  1.103989e-02 -2.351256e-03  1.239448e-02
## 6-254243   -1.624201e-02  6.614659e-03 -5.160333e-02 -4.587356e-03
## 6-254262    1.039263e-02 -1.253486e-02  8.105117e-04 -3.114837e-02
## 6-254329    2.054846e-03 -1.856141e-02 -4.317746e-02 -1.519463e-03
## 6-254354    1.306908e-01  2.506165e-02 -1.743599e-02  7.207636e-02
## 6-254386   -3.965059e-02  2.708795e-01 -1.950670e-02  1.004430e-01
## 6-254438   -1.949665e-02  3.467074e-02 -4.197385e-02 -9.150087e-03
## 6-254450   -6.086644e-03 -2.803278e-02  2.506110e-02 -9.076024e-03
## 6-254512   -4.239267e-02  6.360249e-02  1.031673e-01  1.763392e-02
## 6-254530   -2.287447e-02 -6.697284e-03 -4.359902e-02 -7.089266e-05
## 6-254534    7.357280e-03  1.413866e-02 -9.782983e-04 -2.031529e-02
## 6-254559   -8.558109e-02  1.165091e-01 -2.541253e-01 -3.060250e-02
## 6-254589    1.908366e-02  1.044651e-02 -7.844897e-03 -4.597378e-04
## 6-254598   -4.368643e-02  1.119355e-01  1.342838e-01 -4.638789e-03
## 6-254605    1.039263e-02 -1.253486e-02  8.105117e-04 -3.114837e-02
## 6-254646   -1.617462e-02  2.214526e-03  8.534941e-03  1.553580e-02
## 6-254647    2.994933e-02 -1.081721e-02 -6.773457e-03 -9.332047e-03
## 6-254682   -1.511826e-02 -2.748081e-02 -9.677756e-02 -1.093938e-02
## 6-254689   -1.247029e-02 -3.399787e-02  6.232464e-02 -2.430161e-02
## 6-254695   -1.918477e-02  1.030492e-02  8.442983e-03  1.450613e-02
## 6-254775    3.026651e-02 -1.341129e-02  1.349205e-03 -3.402155e-02
## 6-254806    3.098113e-01 -1.268924e-01  1.424304e-01  1.446831e-01
## 6-254832   -7.007535e-03  1.494920e-02 -5.617853e-02 -5.288326e-03
## 6-254859    8.945168e-02  2.252086e-02 -1.021742e-02  5.379010e-02
## 6-254906   -7.148564e-03 -2.873079e-02  3.054837e-02 -1.407698e-03
## 6-254930   -4.155527e-02  6.261187e-02  1.036491e-01  1.794178e-02
## 6-254961    4.951154e-03 -2.159245e-02 -2.678036e-02 -1.194906e-02
## 6-254990   -1.507210e-02  9.333920e-03 -3.965559e-02 -3.686985e-03
## 6-255125   -1.940812e-02  4.637807e-02 -3.699216e-02 -5.626825e-03
## 6-255181   -4.836650e-03  5.278983e-03  1.832192e-02  6.658511e-03
## 6-255225    1.225063e-02 -4.890009e-03  1.844658e-03 -7.083621e-02
## 6-255229   -3.406452e-02 -1.333967e-02  2.917191e-02  1.815011e-02
## 6-255245   -8.029528e-03 -9.908441e-02  1.020128e-02  4.503692e-02
## 6-255376   -1.584300e-02  3.840879e-02 -2.433081e-02 -5.320126e-03
## 6-255454   -3.144941e-02 -9.645003e-03 -6.298916e-02 -4.480741e-03
## 6-255545   -4.188515e-02  3.968631e-02 -9.853857e-02 -1.576731e-02
## 6-255569   -1.271410e-02  2.783092e-02 -2.971891e-02 -1.990358e-03
## 6-255605    7.936779e-03  1.557947e-02 -1.140005e-03 -2.304003e-02
## 6-255659   -6.600930e-03 -9.830057e-05  4.443050e-04 -1.077023e-02
## 6-255662   -1.963441e-01  3.262639e-01 -7.176255e-02 -4.004117e-04
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## 6-255786   -3.715894e-02 -1.908640e-02 -8.359943e-02 -1.592286e-02
## 6-255957   -7.216459e-03  1.473783e-02 -7.881580e-02 -5.700073e-03
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## 6-256077   -2.760142e-02  3.267782e-02 -1.188484e-01 -7.886227e-03
## 6-256118   -2.892274e-03 -2.244687e-02 -6.139422e-04  1.340762e-03
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## 6-256490 -2.341326e-02 5.176343e-02 -1.717983e-02 -5.198804e-03
## 6-256529 -3.229707e-02 9.115541e-02 1.067616e-01 -1.155113e-02
## 6-256584 -2.273908e-02 -6.596074e-03 -4.751691e-02 -4.831659e-03
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## 6-256709 -1.437679e-02 4.882735e-03 3.333156e-03 1.184210e-02
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## 6-256760 -1.716088e-02 3.782935e-02 2.016777e-02 5.832636e-03
## 6-256789 -1.716088e-02 3.782935e-02 2.016777e-02 5.832636e-03
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## 6-256840 3.926445e-02 2.239156e-03 -5.005156e-04 -3.311053e-03
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## 6-257032 3.417193e-02 -1.361479e-02 2.594703e-03 -3.172653e-02
## 6-257041 3.776981e-02 1.299474e-02 -4.530935e-03 2.872082e-02
## 6-257056 -4.912459e-03 -2.099940e-02 1.976087e-02 -1.757886e-03
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## 6-257169 4.951154e-03 -2.159245e-02 -2.678036e-02 -1.194906e-02
## 6-257214 3.639996e-02 -1.459869e-02 2.687121e-03 -3.813589e-02
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## 6-257308 5.923787e-02 1.449238e-02 -7.594692e-03 3.375012e-02
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## 6-257962 -2.148050e-02 -7.835731e-03 1.713638e-02 2.287745e-02

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## 6-258476 -5.545832e-03 -2.005495e-03 -8.426397e-02 -2.574886e-03
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## 6-258501 -8.205923e-03 1.588042e-02 2.811112e-02 1.557614e-03
## 6-258628 4.591245e-02 1.143352e-02 -5.749481e-03 2.500303e-02
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| ## 6-266224 | 7.169458e-02 | 1.870404e-02 | -3.961047e-03 | 2.948008e-02 |
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| ## 6-266372 | 7.169458e-02 | 1.870404e-02 | -3.961047e-03 | 2.948008e-02 |
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| ## 6-287014 | -3.656422e-01 | 1.841312e-01 | -5.263143e-03 | -1.591492e-01 |
| ## 6-287167 | -9.688009e-03 | -1.152302e-01 | 1.744501e-02 | 6.199012e-02 |
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| ## 6-287279 | -1.957154e-02 | -4.278027e-03 | 6.147883e-04 | 1.664233e-03 |
| ## 6-287340 | 4.338286e-02 | -1.257763e-02 | 4.559314e-03 | -3.078079e-02 |
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| ## 6-287490 | -2.910766e-02 | -1.784329e-02 | 3.590185e-02 | 6.182060e-03 |
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| ## 6-288126 | -3.192312e-02 | -1.315236e-02 | -9.593426e-02 | -1.318509e-02 |
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| ## 6-288976 | 3.738892e-02 | 2.469128e-03 | -2.291541e-03 | 6.370683e-03 |
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| ## 6-289086 | -1.497186e-02 | 3.694226e-02 | 6.302001e-02 | 9.575365e-04 |
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| ## 6-289242 | -2.421855e-02 | -8.674149e-03 | 2.026808e-02 | 2.531030e-02 |
| ## 6-289266 | -9.658439e-03 | -3.286424e-04 | -4.047865e-02 | -1.820257e-03 |
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| ## 6-289306 | -1.963445e-02 | 1.066466e-02 | 2.433640e-02 | 1.813133e-02 |
| ## 6-289307 | 3.269541e-03 | -6.235166e-03 | -3.306700e-02 | -1.388778e-03 |
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## 6-289860    -1.153804e-02 -3.168471e-03  1.360638e-02 -5.452789e-03
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## 6-290372    -2.548762e-02 -5.890339e-02  6.136418e-02 -7.922863e-03
## 6-290404    1.322040e-02 -1.229365e-02 -2.207519e-03 -5.358807e-02
## 6-290471    -1.368590e-02  1.752026e-02  2.622755e-02  9.699350e-03
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## 6-294249 1.341114e-02 -1.673455e-02 2.448205e-04 -3.607434e-02
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## 7-301550 -1.507440e-02 3.324605e-02 2.002022e-02 1.340271e-03
## 7-301585 -1.889606e-02 -2.287382e-02 -5.024989e-02 -1.140800e-02
## 7-301610 -8.372460e-02 -6.206919e-02 -1.179876e-01 -2.131028e-02
## 7-301610_2 -3.369501e-02 -3.469626e-02 2.378230e-02 5.562867e-03
## 7-301719 -4.239336e-02 7.361596e-03 -1.160640e-01 -1.478089e-02

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## 7-301787 -1.799687e-02 -9.493642e-03 5.554534e-03 -6.073125e-03
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## 7-301817 -4.171486e-03 6.837773e-03 1.747015e-02 5.136854e-03
## 7-301820 -7.930073e-03 1.473196e-02 1.753903e-02 7.908622e-03
## 7-301849 4.928991e-03 -3.959233e-02 -1.904380e-02 -1.220509e-02
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## 7-301881 -4.171486e-03 6.837773e-03 1.747015e-02 5.136854e-03
## 7-301891 5.068363e-02 1.362086e-03 3.731898e-03 -2.718699e-02
## 7-301916 1.773721e-03 6.750145e-03 -4.127016e-02 -2.076783e-03
## 7-301962 6.968179e-02 2.996907e-02 -1.220849e-02 5.902844e-02
## 7-302123 -3.104160e-02 5.983468e-02 6.881254e-02 1.693535e-03
## 7-302125 -1.367140e-02 1.098473e-03 4.128207e-03 1.014588e-02
## 7-302165 -3.746034e-02 -1.071504e-02 3.572951e-02 3.261695e-02
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## 7-302252 3.366754e-03 -2.861967e-03 -2.771002e-02 -2.245368e-03
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## 7-302327 -1.754796e-02 -4.924010e-03 -4.591795e-02 -7.021694e-03
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## 7-302353 8.157397e-03 1.285481e-03 -8.111985e-05 -3.287304e-02
## 7-302372 5.696584e-03 -1.870562e-02 -1.370466e-03 -6.038043e-02
## 7-302442 -2.286997e-02 7.760546e-03 1.147095e-02 2.162942e-02
## 7-302450 1.026568e-02 2.059513e-02 -3.581951e-03 -2.521250e-02
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## 7-302492 -3.904243e-02 2.302471e-02 1.621583e-02 3.114803e-02
## 7-302501 -3.220474e-02 1.550547e-02 1.718322e-02 2.972392e-02
## 7-302533 -1.801219e-02 4.757703e-02 -2.622083e-02 -4.792864e-03
## 7-302575 -3.625889e-02 7.131142e-02 6.760857e-02 1.788669e-02
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## 7-302760 -3.098062e-02 1.002706e-02 -9.447948e-04 2.147262e-02
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## 7-302877 -9.581835e-03 7.166214e-02 5.862356e-02 -3.459826e-02
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## 7-303075 -1.242797e-02 -1.944265e-02 -1.213521e-02 9.619238e-03
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## 7-303122 -6.538817e-03 -6.044151e-03 3.458347e-03 -1.336443e-02
## 7-303141 -4.262220e-02 9.690211e-02 5.336497e-02 1.076542e-02
## 7-303169 -4.747611e-03 -3.372710e-04 7.036480e-04 -8.877085e-03
## 7-303181 -1.124368e-02 9.140577e-03 2.788647e-02 1.150751e-02
## 7-303195 -1.776910e-02 4.024559e-02 2.473987e-02 5.384578e-04
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## 7-303250 -9.878514e-03 -1.745868e-03 4.272950e-02 6.285950e-03
## 7-303273 -7.288564e-03 9.713710e-03 2.756236e-02 -1.185025e-03
## 7-303345 -2.608570e-03 5.474474e-03 -3.973225e-02 -2.265797e-03
## 7-303351 -4.262220e-02 9.690211e-02 5.336497e-02 1.076542e-02
## 7-303408 -2.393669e-02 7.335823e-04 1.354675e-02 1.561986e-02
## 7-303445 -4.747611e-03 -3.372710e-04 7.036480e-04 -8.877085e-03
## 7-303451 -1.024961e-02 -1.527833e-03 4.341746e-02 6.764417e-03
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## 7-303591 -7.069094e-03 -8.954684e-03 2.217540e-02 -4.158545e-02
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## 7-303669 1.864594e-02 5.196921e-03 3.017054e-03 -3.904030e-02
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## 7-303700_2 5.148453e-02 1.097215e-02 7.030925e-03 -6.040700e-02
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## 7-303876 -1.140433e-02 -1.697899e-02 3.431606e-02 -4.519707e-02
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## 7-303892 -2.091052e-02 2.663714e-02 4.999353e-02 1.314758e-02
## 7-303920 1.864594e-02 5.196921e-03 3.017054e-03 -3.904030e-02
## 7-303948 -9.061757e-03 -1.685213e-02 4.243091e-02 -1.909193e-02
## 7-303958 -1.056297e-02 -2.092901e-02 1.937957e-02 -7.266068e-03
## 7-303969 -1.870682e-02 8.511952e-03 -3.054058e-03 1.219458e-02
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## 7-304551 -1.956501e-02 8.981819e-03 -3.467322e-04 1.332184e-02
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## 7-304884 -1.076432e-02 1.300724e-02 2.725747e-02 1.056427e-02
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## 7-304935 -2.252360e-02 5.823751e-03 -3.184034e-02 1.035610e-02
## 7-305008 -1.602925e-02 -9.699818e-03 6.310084e-03 -3.729970e-03
## 7-305067 4.234169e-02 1.567347e-02 -6.214502e-03 3.213392e-02
## 7-305106 5.052501e-03 -2.140112e-02 -2.244717e-02 -1.254945e-02
## 7-305110 -1.229426e-02 -5.225562e-02 5.368868e-03 3.365538e-02
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## 7-305294 4.234169e-02 1.567347e-02 -6.214502e-03 3.213392e-02
## 7-305336 -2.647143e-02 -3.801697e-02 -2.123745e-02 1.906942e-02
## 7-305348 -9.528753e-03 1.462460e-02 2.417043e-02 9.462426e-03
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## 7-305621 -2.305984e-02 5.186852e-02 7.271838e-02 -2.346132e-03
## 7-305637 4.176730e-02 -6.014820e-03 9.020444e-03 -9.190874e-02
## 7-305640 5.437076e-03 1.169708e-03 2.111982e-03 -2.326422e-02
## 7-305654 -3.944695e-03 -7.395116e-02 1.140819e-02 3.881344e-02
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## 7-305839 -2.334831e-04 2.324241e-02 2.982725e-03 -1.941895e-02
## 7-305873 -3.442716e-02 -3.050045e-05 9.655626e-03 2.528304e-02
## 7-305926 -1.701099e-02 -1.046814e-02 1.764406e-02 1.670954e-02
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## 7-306223 1.550001e-02 5.153174e-03 2.233636e-03 -3.267168e-02
## 7-306247 7.338403e-02 8.628827e-03 -9.481291e-03 3.287741e-02
## 7-306304 -2.054126e-02 4.620753e-02 2.875629e-02 7.157463e-04
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## 7-306377 -3.186575e-02 2.319337e-02 -1.063754e-01 -4.731681e-03
## 7-306386 1.109231e-01 3.904674e-02 -1.908521e-02 6.522038e-02
## 7-306392 -2.544460e-02 1.544461e-02 -1.022304e-01 -1.181255e-02
## 7-306428 5.052501e-03 -2.140112e-02 -2.244717e-02 -1.254945e-02
## 7-306453 -4.750859e-02 -2.120394e-01 4.786803e-03 9.591171e-02
## 7-306467 2.081656e-02 2.626776e-03 7.423186e-03 -4.290804e-02
## 7-306514 -3.245062e-02 3.283204e-02 -8.208079e-02 -3.744442e-03
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## 7-306567 -1.801840e-02 -2.625204e-02 2.595068e-02 4.261615e-03
## 7-306717 -4.368720e-02 1.954249e-02 -3.035580e-02 2.854343e-02
## 7-306766 -5.881336e-02 -1.950059e-02 -1.090045e-01 -1.266254e-02
## 7-306786 -5.881336e-02 -1.950059e-02 -1.090045e-01 -1.266254e-02
## 7-306821 -1.069571e-02 1.983695e-02 3.664096e-02 -1.952885e-04
## 7-306826 -1.067209e-01 -5.462191e-02 -1.074210e-01 -1.851282e-02
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## 7-306921 -4.200785e-02 2.361287e-02 3.943359e-03 3.025716e-02
## 7-306959 -1.121061e-02 2.023152e-02 3.715739e-02 4.090442e-04
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## 7-307146 2.258761e-02 -7.485886e-03 3.371405e-03 -4.370290e-02
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## 7-307209 -1.002353e-02 5.105519e-03 -5.218959e-02 -6.955167e-03
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## 7-307482     -2.471877e-02  1.999976e-02  1.148760e-02  1.013712e-02
## 7-307502      8.039496e-03  1.415209e-02  1.138940e-03 -1.934901e-02
## 7-307506     -3.178831e-02 -1.791015e-02  3.239109e-02 -4.308010e-02
## 7-307560      4.515872e-02  1.177673e-02  7.230438e-03 -6.225933e-02
## 7-307570     -8.948689e-04  2.706911e-02  5.366108e-03 -1.807306e-02
## 7-307607      1.614518e-02  8.627728e-03  4.668384e-03 -4.257725e-02
## 7-307651     -1.694564e-02  4.331120e-02 -3.459682e-02 -7.824440e-03
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## 7-307746     -2.192048e-02 -2.018056e-04  2.394292e-02  1.504526e-02
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## 7-307775_2   -1.826732e-02 -5.106592e-02 -2.502841e-03  2.791616e-02
## 7-307781     -1.080818e-02 -1.461836e-02  2.812528e-02  9.206731e-03
## 7-307785     -1.080818e-02 -1.461836e-02  2.812528e-02  9.206731e-03
## 7-307826     -1.467380e-02  2.075649e-02  2.379639e-02  1.292037e-02
## 7-307891     -1.146686e-03 -3.413661e-03  2.478894e-02 -1.772998e-02
## 7-307898      4.628066e-02  1.529458e-02 -5.359077e-03  1.570201e-02
## 7-307908     -1.671425e-02 -4.686112e-02 -1.271409e-03  2.572950e-02
## 7-307911      1.654998e-01  3.463642e-02 -2.012028e-02  8.681752e-02
## 7-307981      6.472465e-02  2.186383e-01 -2.550584e-02 -7.648757e-02
## 7-307991     -1.091432e-02  4.114980e-02  4.009019e-02 -7.615712e-03
## 7-308103     -5.926814e-03  1.024977e-02 -3.602319e-02 -1.320156e-03
## 7-308120     -4.453339e-02  1.200605e-02 -1.484022e-01 -2.380858e-02
## 7-308124     -2.267293e-02  4.453013e-02 -1.814064e-02 -6.389348e-03
## 7-308240     -7.661587e-02  1.852166e-01  1.489716e-01  9.651697e-03
## 7-308304     -2.189890e-02 -3.601257e-02 -1.337628e-01 -1.943153e-02
## 7-308314     -3.321304e-03  6.550562e-03  1.974798e-02 -5.805699e-04
## 7-308418     -7.006814e-03 -8.607891e-04 -2.926370e-02 -1.682971e-03
## 7-308450      2.470787e-02 -2.047929e-02  1.090769e-03 -3.401857e-02
## 7-308476     -1.969503e-02 -1.196311e-02  1.960433e-02  1.352078e-02
## 7-308505      4.733673e-03  1.392180e-02 -2.063730e-03 -2.008885e-02
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## 7-308524     -1.848103e-02  4.357227e-03  8.468250e-03  1.568015e-02
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## 7-308549     -1.879135e-02 -2.887679e-02  4.174022e-02  9.099513e-03
## 7-308569     -3.558124e-02 -1.745236e-02 -8.501242e-02 -1.842348e-02
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## 7-309557 -3.961169e-03 3.918091e-03 1.815731e-02 1.308431e-03
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## 7-309568 -1.027157e-03 -2.298622e-02 -4.964740e-02 -1.264328e-02
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## 7-311523 -1.445567e-02 3.827156e-02 -3.790250e-02 -8.132001e-03
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## 7-312114 -8.356072e-05 -1.589968e-02 3.670952e-02 -3.291336e-03
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## 7-312230 -1.347573e-02 2.043714e-04 3.879024e-03 1.061046e-02
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## 7-313236 -2.909641e-02 -6.907914e-03 -7.211145e-02 -1.020474e-02
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| ## 7-316417 | -3.763726e-02 | -1.062859e-02 | 3.451498e-02 | 3.531532e-02 |
| ## 7-316461 | -1.489850e-02 | -3.366549e-02 | -9.920565e-03 | 8.777994e-03 |
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| ## 7-316796 | 1.839356e-02 | 9.197337e-03 | 3.971077e-03 | -3.573641e-02 |
| ## 7-316823 | -9.364015e-03 | -7.526066e-02 | 1.151037e-02 | 4.135337e-02 |
| ## 7-316827 | 3.670009e-04 | -7.613339e-03 | 2.525341e-03 | -2.203192e-02 |
| ## 7-316943 | 4.092097e-02 | -1.379459e-02 | -6.562473e-03 | -1.422419e-02 |
| ## 7-316957 | -1.475278e-02 | 3.748988e-02 | -1.782753e-02 | -5.890860e-03 |
| ## 7-316976 | 6.704094e-02 | 1.036665e-02 | 1.849351e-03 | -2.479070e-02 |
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| ## 7-317098 | -4.084770e-02 | -1.715290e-02 | 4.164033e-02 | 3.293815e-02 |
| ## 7-317143 | -3.425214e-02 | -1.711093e-02 | 3.552282e-02 | 2.751351e-02 |
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| ## 7-317239 | -3.469271e-02 | -1.969213e-02 | -6.372622e-02 | -1.674397e-02 |
| ## 7-317260 | -4.308749e-03 | 1.224683e-02 | 1.789299e-02 | 4.502666e-06 |
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| ## 7-317378 | -1.866393e-02 | -7.257261e-03 | -5.386060e-02 | -7.678707e-03 |
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| ## 7-317412 | -6.255741e-02 | -1.670980e-01 | -8.108403e-04 | 1.072283e-01 |
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## 7-325883 -5.588637e-03 -5.324927e-03 6.807606e-03 -1.476371e-02
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| ## 7-329842 | -8.934351e-03 | -3.213710e-02 | 3.412354e-02 | -1.194112e-02 |
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| ## 7-329937 | -5.399905e-03 | -5.839048e-03 | 6.051921e-03 | -1.676278e-02 |
| ## 7-329976 | -1.105031e-02 | 2.038985e-02 | 2.943154e-02 | 5.509831e-03 |
| ## 7-329996 | -3.449362e-02 | 3.813509e-02 | 1.149127e-01 | 2.871204e-02 |
| ## 7-330051 | -1.478546e-02 | 2.513227e-02 | 5.569347e-02 | 5.270451e-04 |
| ## 7-330125 | 2.223997e-02 | -9.697552e-03 | -4.816339e-03 | -7.741049e-03 |
| ## 7-330126 | -4.536775e-03 | -3.965341e-02 | 2.188792e-03 | 2.786822e-03 |
| ## 7-330152 | -5.810627e-03 | -1.251047e-01 | -2.764651e-03 | 3.381183e-02 |
| ## 7-330174 | -1.105031e-02 | 2.038985e-02 | 2.943154e-02 | 5.509831e-03 |
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| ## 7-331048 | -9.119341e-03 | -2.491304e-02 | 2.342127e-02 | -9.265543e-03 |
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| ## 7-331232 | -7.753480e-03 | 1.686293e-02 | 3.642791e-02 | -1.319317e-03 |
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| ## 7-337846 | -2.189406e-02 | 4.927773e-02 | 2.370295e-02 | 1.004468e-02 |
| ## 7-337868 | 1.266339e-01 | 3.183356e-02 | -1.861368e-02 | 7.564197e-02 |
| ## 7-337873 | 1.057073e-03 | -1.021833e-02 | 8.311460e-03 | -4.820002e-02 |
| ## 7-337903 | -1.970434e-02 | 4.455923e-02 | 2.626562e-02 | -3.449517e-04 |
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## 7-338259 -1.050519e-02 1.848176e-02 3.980888e-02 1.758087e-03
## 7-338320 9.742225e-02 2.847853e-02 -1.280944e-02 6.505757e-02
## 7-338336 -3.324625e-02 -1.272183e-02 -8.879553e-02 -1.368393e-02
## 7-338371 4.899498e-03 -2.621747e-02 -3.777678e-02 -1.268311e-02
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## 7-338562 -4.130540e-02 -2.678820e-02 -6.551192e-02 -3.912036e-03
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## 7-338587 -1.970434e-02 4.455923e-02 2.626562e-02 -3.449517e-04
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## 7-338950 4.958842e-02 -2.207748e-02 -1.256643e-02 -4.808782e-02
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| ## 7-341503 | -3.180755e-03 | -4.126418e-04 | 1.132650e-03 | -2.560100e-02 |
| ## 7-341562 | 8.410334e-02 | 2.292729e-02 | 1.144994e-02 | -1.171182e-01 |
| ## 7-341584 | -8.643088e-03 | 1.722040e-02 | 4.082968e-02 | -3.400754e-04 |
| ## 7-341616 | -4.065940e-04 | -1.981045e-02 | -8.125240e-02 | -2.227020e-03 |
| ## 7-341719 | -7.692390e-04 | -3.090293e-02 | 5.528471e-02 | -3.334961e-02 |
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| ## 7-342152 | 4.128702e-02 | 6.609872e-03 | 3.800795e-03 | -3.529981e-02 |
| ## 7-342190 | -1.210093e-02 | -6.708261e-03 | -7.174781e-03 | -2.693601e-03 |
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| ## 7-342554 | -7.407252e-03 | -1.944892e-02 | 1.809878e-02 | -2.588560e-03 |
| ## 7-342607 | -2.878512e-02 | 5.895263e-02 | -4.389201e-02 | -1.033272e-02 |
| ## 7-342720 | 8.758207e-03 | 1.013102e-02 | 2.584401e-03 | -1.652171e-02 |
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## 7-343027 2.282572e-02 -4.045824e-03 -5.560084e-03 3.900057e-03
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## 7-343162 -1.884030e-02 -9.920655e-03 -3.823624e-02 -4.763032e-03
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## 7-343271 2.424719e-02 2.672665e-03 2.190071e-03 -1.972685e-02
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## 7-343322 -1.970434e-02 4.455923e-02 2.626562e-02 -3.449517e-04
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## 7-343354 8.357028e-03 1.052205e-02 3.169443e-03 -1.597824e-02
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## 7-343622 -2.089754e-02 5.405943e-03 1.953307e-03 1.447115e-02
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## 7-344529 -2.590828e-02 -1.844457e-02 1.552683e-02 -6.533386e-03
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## 7-344972 5.959309e-02 1.986310e-02 7.901924e-03 -9.448021e-02
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## 7-346218_2 2.588500e-02 -1.014290e-02 2.266346e-04 -1.972622e-02
## 7-346247 -2.793583e-02 -2.116134e-03 -1.429498e-03 1.316297e-02
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## 7-346273 -4.994036e-02 -1.652356e-02 5.253480e-02 3.121877e-02
## 7-346329 -1.532910e-02 -5.308491e-03 -3.963057e-02 -5.914714e-03
## 7-346331 -1.392029e-02 1.192443e-03 6.004225e-03 1.093808e-02
## 7-346362 -1.338149e-02 1.190049e-03 5.894455e-03 1.062404e-02
## 7-346541 -2.202395e-02 1.449788e-02 1.199535e-02 2.059342e-02
## 7-346628 8.627647e-03 -3.024237e-02 3.690497e-03 -1.955652e-02
## 7-346643 -5.728209e-02 1.534638e-01 1.315984e-01 -1.166222e-02
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## 7-347444 -6.163241e-02 3.841397e-02 2.861495e-02 3.831230e-02
## 7-347473 1.690085e-02 -1.031969e-02 2.203451e-02 -5.858759e-02
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## 7-347536 -3.144074e-02 -2.979389e-02 -7.198685e-02 -1.653739e-02
## 7-347555 -1.102709e-02 4.817782e-02 4.636776e-02 -1.557525e-02
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## 7-347800 -1.620682e-02 3.615512e-02 -2.580402e-02 -9.061128e-03
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## 7-349517 4.059266e-02 4.798486e-03 2.841485e-03 -2.515552e-02
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## 7-349729      1.463668e-01  4.824924e-02 -2.110214e-02  1.029226e-01
## 7-349763     -1.515845e-02 -4.077051e-03 -6.703932e-02 -1.956371e-03
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## 7-349800     -6.807686e-03  8.518246e-03  2.070675e-02  8.576122e-03
## 7-349942     -3.367028e-02 -1.606572e-02 -7.133398e-02 -9.537234e-03
## 7-349969     -2.494530e-02 -7.241558e-04 -2.014323e-02  7.217798e-03
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## 8-350035     -1.592821e-02  3.169018e-02  4.735748e-02  5.479380e-03
## 8-350044      1.240619e-02  7.771047e-03  3.228403e-03 -3.847365e-02
## 8-350109     -1.827147e-02  3.667475e-02 -1.586701e-02 -3.394090e-03
## 8-350133      4.990190e-02 -1.365282e-02  1.863054e-03 -7.810579e-02
## 8-350247     -4.609009e-01 -4.863272e-02  9.782856e-02  1.695291e-01
## 8-350255     -2.081731e-02  7.934403e-03  8.879508e-03  1.822580e-02
## 8-350325     -3.460121e-02  1.769177e-02  1.392968e-02  2.554891e-02
## 8-350347     -2.122414e-02  7.716891e-03  9.455890e-03  1.860904e-02
## 8-350350     -1.939157e-02 -4.577496e-03 -4.792176e-02 -5.274508e-03
## 8-350399     -3.460121e-02  1.769177e-02  1.392968e-02  2.554891e-02
## 8-350514      2.823856e-02  6.272776e-03  2.267482e-03 -1.755794e-02
## 8-350540     -1.292666e-02  8.997966e-03 -3.184603e-02 -4.555266e-03
## 8-350590      2.617982e-02  6.486442e-03  1.869630e-03 -2.945831e-02
## 8-350793     -7.913773e-03 -1.258702e-02  3.062922e-02 -3.612868e-02
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## 8-350845     -1.560402e-02  3.622654e-02 -3.023995e-02 -5.724556e-03
## 8-350894     -1.931085e-02  1.178582e-02 -6.960531e-02 -4.058738e-03
## 8-350943      3.876282e-04  5.164061e-03  1.901992e-02 -1.038976e-02
## 8-350985     -1.384928e-02  1.138347e-02  8.386206e-03  1.224703e-02
## 8-351057     -2.133846e-02 -4.164581e-02 -1.183008e-02  1.406767e-02
## 8-351109     -2.143918e-02 -7.567880e-03 -9.245925e-04 -3.991424e-03
## 8-351396      5.242151e-02  1.161407e-02 -6.820978e-03  2.589394e-02
## 8-351421     -2.144345e-02 -5.435242e-02  1.190069e-01 -6.373697e-02
## 8-351486      1.933599e-02  1.210585e-02  1.885417e-02 -1.647457e-02
## 8-351550     -2.848330e-02  2.892609e-02  2.837702e-02  1.707937e-02
## 8-351696     -8.289505e-03 -1.459989e-02  2.623060e-02 -2.092047e-02
## 8-351712     -8.327492e-03  2.188133e-02 -1.803466e-02 -4.386919e-03
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## 8-352315 6.233008e-02 4.328234e-03 -8.988248e-03 2.491305e-02
## 8-352396 -3.649038e-02 -1.677760e-02 -7.771585e-02 -8.975435e-03
## 8-352419 -2.498596e-02 7.363800e-03 1.183584e-02 2.229993e-02
## 8-352428 4.348158e-02 1.957565e-03 -6.806250e-03 1.548680e-02
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## 8-352483 -1.244818e-02 5.208594e-03 -3.744010e-02 -5.009229e-03
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## 8-354297 -8.919007e-03 8.210749e-03 -4.422312e-02 -2.558739e-03
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## 8-354433 7.604101e-02 1.766465e-02 -9.831404e-03 4.226987e-02
## 8-354454 -9.046718e-03 1.107588e-02 2.128221e-02 5.830674e-03
## 8-354471 -2.885068e-02 -3.014117e-02 4.895786e-02 4.651151e-03
## 8-354473 -2.659662e-02 -1.380124e-02 1.553771e-02 1.532012e-02
## 8-354492 -1.778673e-03 -6.822499e-02 9.788289e-03 3.448578e-02
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## 8-354565 -8.315430e-03 -5.662518e-03 -3.450003e-02 -2.633008e-03
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| ## 8-356065 | 6.154050e-02 | 1.795781e-02 | -2.406704e-03 | 1.003402e-02 |
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| ## 8-356414 | 1.405769e-01 | 3.519595e-01 | -1.689000e-01 | -5.917815e-02 |
| ## 8-356468 | 1.405769e-01 | 3.519595e-01 | -1.689000e-01 | -5.917815e-02 |
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| ## 8-356652 | 3.925721e-02 | 1.216305e-02 | -5.544091e-03 | 2.564071e-02 |
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| ## 8-357319 | -9.343497e-03 | 1.203171e-02 | 2.429217e-02 | 1.291677e-02 |
| ## 8-357334 | -3.477599e-03 | -2.537602e-02 | -3.660660e-03 | 1.132342e-03 |
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| ## 8-357876 | -6.976205e-03 | -2.023210e-02 | 2.934875e-02 | -1.310552e-02 |
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## 8-366769 -1.352267e-02 -4.043967e-02 4.606025e-02 3.000734e-03
## 8-366776 -3.872884e-03 1.432186e-02 1.114242e-02 -4.499052e-03
## 8-366779 1.263043e-01 9.186855e-03 -8.600052e-02 1.615869e-02
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## 8-366888 -6.483876e-03 -8.454958e-03 2.201816e-02 -2.595026e-02
## 8-366901 -2.731769e-02 3.416785e-02 2.198808e-02 1.963020e-02
## 8-366949 1.176652e-01 1.273075e-02 -9.863597e-03 1.786356e-02
## 8-366954 1.176652e-01 1.273075e-02 -9.863597e-03 1.786356e-02

```

| | | | | |
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| ## 8-367118 | 3.528167e-03 | 8.129058e-03 | 3.717027e-02 | -3.278619e-02 |
| ## 8-367127 | -2.179015e-02 | 1.370345e-02 | 1.848843e-02 | 1.636064e-02 |
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| ## 8-367504 | -2.231442e-02 | 6.404259e-03 | 1.097316e-02 | 2.016695e-02 |
| ## 8-367580 | -1.418605e-02 | -8.028802e-02 | 1.360917e-02 | 3.273428e-02 |
| ## 8-367627 | -3.048761e-02 | 5.757737e-03 | -2.742028e-02 | 6.105490e-03 |
| ## 8-367642 | -2.408529e-02 | -2.652431e-03 | -4.733363e-03 | 1.489175e-02 |
| ## 8-367724 | -6.318046e-03 | -6.801742e-02 | 1.059824e-02 | 3.147488e-02 |
| ## 8-367811 | -2.951220e-02 | -6.265424e-02 | -2.785782e-02 | 1.884637e-02 |
| ## 8-367839 | -9.720983e-03 | -8.442163e-03 | 2.805745e-02 | -2.979593e-02 |
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| ## 8-367986 | 8.243674e-03 | -6.631943e-03 | -1.002282e-03 | -3.363468e-02 |
| ## 8-367995 | -1.460588e-02 | -1.190079e-02 | 1.413795e-02 | 6.974980e-03 |
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| ## 8-368167 | 6.769802e-02 | 2.897143e-02 | -1.066181e-02 | 5.626336e-02 |
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| ## 8-368274 | -1.490683e-02 | -1.302341e-02 | 1.500664e-02 | 7.102317e-03 |
| ## 8-368300 | 4.811075e-02 | -2.314796e-02 | -3.192913e-03 | -8.035537e-02 |
| ## 8-368309 | -1.216738e-02 | -6.545559e-02 | 7.045772e-03 | 4.180126e-02 |
| ## 8-368333 | -1.197961e-01 | 3.474781e-01 | -1.046353e-01 | 1.218013e-02 |
| ## 8-368413 | 4.143751e-02 | 1.696179e-02 | -6.579426e-03 | 3.051070e-02 |
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| ## 8-368583 | 7.054744e-02 | 4.431209e-02 | 5.068931e-03 | -1.393346e-02 |
| ## 8-368617 | -3.133846e-02 | -6.109598e-02 | -2.704349e-02 | 2.098464e-02 |
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| ## 8-368750 | 4.087424e-02 | 9.457888e-03 | -5.255144e-03 | 1.630274e-04 |
| ## 8-368763 | -2.234410e-02 | -1.776091e-03 | -4.709751e-02 | -5.737175e-03 |
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| ## 8-368869 | 2.316180e-02 | -6.523995e-03 | 3.570239e-03 | -3.133232e-02 |
| ## 8-368897 | -1.766592e-02 | 1.922080e-02 | 1.616260e-02 | 1.386452e-02 |
| ## 8-368919 | 6.340450e-03 | -6.629086e-03 | -2.411740e-03 | -3.770225e-02 |
| ## 8-368919_2 | -2.714924e-02 | -8.143771e-03 | -2.628515e-03 | 1.716948e-02 |
| ## 8-369049 | -1.490575e-03 | 7.332283e-03 | -2.840989e-02 | -4.605531e-03 |
| ## 8-369115 | 1.683493e-01 | -3.656296e-01 | 2.369435e-04 | -1.166817e-01 |
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| ## 8-369129 | -1.010549e-02 | 5.864918e-03 | 1.072023e-02 | 8.922272e-03 |
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## 8-369141 -1.551698e-03 -7.951104e-03 2.071262e-02 4.036276e-03
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## 8-369402 -1.835661e-03 -8.193936e-05 -3.004341e-02 -6.647089e-04
## 8-369427 -1.940444e-02 2.182647e-02 2.388306e-02 1.221035e-02
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## 8-369497 -2.853353e-02 6.519189e-02 2.755547e-02 1.169401e-02
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## 8-369602 -3.002701e-02 1.275512e-02 2.755067e-03 1.844362e-02
## 8-369673 -1.829742e-02 1.970300e-02 2.236849e-02 1.126866e-02
## 8-369685 1.733511e-02 -1.694911e-02 -6.095167e-03 -7.198404e-02
## 8-369693 -2.149854e-02 -1.773081e-02 -5.549184e-02 -1.855177e-02
## 8-369721 -4.557075e-02 1.815776e-02 -7.405841e-03 2.469200e-02
## 8-369740 1.700731e-02 1.076392e-02 -6.826149e-03 -9.558512e-03
## 8-369778 5.989913e-02 1.181595e-02 2.001225e-03 -2.763738e-02
## 8-369781 -2.584475e-02 -8.135730e-03 9.596992e-03 1.204435e-02
## 8-369792 1.038960e-01 3.927083e-02 -2.317626e-02 7.120746e-02
## 8-369806 3.733658e-02 2.259766e-02 -6.845998e-03 1.401679e-02
## 8-369860 3.400715e-02 5.923051e-03 -4.615149e-04 4.008906e-03
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## 8-370124 -1.470204e-02 2.360346e-02 2.413357e-02 6.718275e-03
## 8-370150 9.624318e-02 3.282089e-02 -1.386800e-02 6.813150e-02
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## 8-370270 5.735131e-02 7.969602e-03 -2.993743e-03 1.312374e-02
## 8-370317 -1.006693e-02 1.750636e-02 2.866027e-02 9.188321e-05
## 8-370331 -3.128223e-02 -4.571800e-03 5.841061e-03 1.649418e-02
## 8-370355 -1.801131e-02 -1.105197e-02 -9.159343e-02 -8.730971e-03
## 8-370358 -1.679354e-01 3.926079e-01 -5.138622e-02 3.287762e-02
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## 8-370369 -2.560823e-02 -2.833853e-02 -8.793291e-02 -2.118099e-02
## 8-370392 -1.004541e-02 -8.130987e-03 2.494070e-02 -2.133115e-02
## 8-370441 -2.560823e-02 -2.833853e-02 -8.793291e-02 -2.118099e-02
## 8-370487 -1.006693e-02 1.750636e-02 2.866027e-02 9.188321e-05
## 8-370592 3.916906e-01 9.628638e-02 -2.939655e-02 4.463878e-02
## 8-370681 3.810295e-02 5.614068e-03 -4.112242e-03 1.701635e-02
## 8-370843 -1.306107e-02 -9.641673e-03 -3.223828e-02 -1.284220e-02
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## 8-371190 2.515745e-02 3.404018e-03 7.363220e-04 -6.175176e-03
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## 8-371448 -1.971043e-02 -8.475827e-03 -8.338304e-04 9.519204e-03
## 8-371461 3.263965e-03 -2.595254e-02 4.104530e-02 -1.282041e-02
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## 8-371593    8.521441e-02  3.222325e-02 -1.163020e-02  2.599665e-02
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## 8-372337   -6.527790e-03 -1.783047e-02  1.995418e-02  8.331310e-04
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## 8-372427   -3.605771e-02 -2.732567e-02  2.947133e-02  9.366743e-03
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## 8-372512   -5.520954e-03  9.049096e-03  2.053040e-02 -3.113345e-04
## 8-372525   -1.019483e-02 -1.100314e-01  1.775455e-02  4.039098e-02
## 8-372588   -1.007078e-01 -2.725423e-01  5.902032e-02 -1.198540e-01
## 8-372631    3.267625e-02  3.437027e-03  9.606678e-04 -6.282651e-03
## 8-372639    3.208768e-02 -5.210739e-03 -1.545911e-03 -9.944246e-03
## 8-372699    7.276329e-02  2.856357e-02 -9.340937e-03  5.757500e-02
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## 8-373280    3.580784e-04 -6.147049e-03  1.737031e-03 -1.795377e-02
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## 8-373437    1.132371e-01  3.597636e-02 -1.148733e-02  6.153023e-02
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## 8-374088 2.880680e-02 9.249252e-03 5.682077e-03 -5.185222e-02
## 8-374092 -1.308719e-03 -5.782682e-03 2.270633e-03 -1.918519e-02
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## 8-374173 -4.899713e-03 1.257696e-02 -2.263804e-02 -5.738553e-04
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## 8-374357 -1.803761e-02 -2.583413e-03 1.246719e-02 -6.962272e-04
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## 8-375797 1.910928e-02 -1.103570e-02 -1.852282e-04 -4.413468e-02
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## 8-375841 5.551954e-02 1.360612e-02 -2.919876e-03 1.644670e-02
## 8-375845 1.910928e-02 -1.103570e-02 -1.852282e-04 -4.413468e-02
## 8-375850 9.199377e-02 1.988079e-02 -8.289861e-03 3.634527e-02
## 8-375860 1.668415e-02 -1.729466e-03 -4.893034e-04 1.302936e-03
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| ## 8-380311 | 3.017530e-02 | 5.397922e-03 | -2.039696e-04 | 4.211890e-03 |
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| ## 8-380518 | -3.299447e-02 | -7.739218e-03 | 5.229040e-03 | -4.479588e-03 |
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| | | | | |
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| ## 8-382524 | 2.730005e-02 | 6.478451e-03 | -1.908879e-03 | 3.502926e-03 |
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| ## 8-383053 | -5.279908e-03 | 1.359328e-02 | 2.150796e-02 | 3.509111e-03 |
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| ## 8-384448 | 1.720610e-01 | 4.693466e-02 | -2.254710e-02 | 1.025212e-01 |
| ## 8-384459 | 2.335989e-02 | -1.923734e-02 | 4.145516e-03 | -9.295492e-02 |
| ## 8-384500 | 1.729711e-02 | -1.739948e-02 | -1.059736e-03 | -3.463307e-02 |
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## 8-385024     -2.016448e-02  4.175580e-02  4.078626e-02  4.495933e-03
## 8-385076     -2.253125e-02 -1.528326e-02 -4.342834e-02  2.410579e-03
## 8-385107     -3.321498e-03 -4.139003e-03  4.591200e-03 -2.456164e-02
## 8-385157     -5.975700e-03 -2.570622e-02 -1.495848e-02 -3.203311e-03
## 8-385225     -1.178375e-02  2.379424e-02  3.138862e-02  8.716877e-03
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## 8-385601     -9.623072e-03 -1.944461e-02  2.098294e-02 -3.501778e-03
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## 8-385810      2.857369e-02 -6.314015e-03 -1.776427e-04 -6.959731e-03
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| ## 8-386804 | 3.136767e-02 | 9.427700e-03 | -2.889978e-03 | 1.415231e-02 |
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| ## 8-388315 | 1.377983e-01 | 9.060987e-02 | -9.397109e-02 | -1.080871e-02 |

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| ## 8-388337 | 1.913304e-02 | -9.994680e-03 | -3.773397e-03 | -3.007823e-02 |
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| ## 8-388980 | -1.716839e-02 | 2.166941e-02 | 1.695344e-02 | 1.087271e-02 |
| ## 8-389035 | -4.986683e-03 | -2.244002e-04 | 5.543598e-04 | -8.103777e-03 |
| ## 8-389046 | -4.193589e-02 | -2.065446e-02 | -9.846486e-02 | -2.011380e-02 |
| ## 8-389063 | -6.510415e-03 | 8.417429e-03 | -4.844906e-02 | -5.758723e-03 |
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| ## 8-389227 | -1.349983e-02 | 2.270387e-02 | -5.507675e-02 | -1.078882e-02 |
| ## 8-389282 | -1.797173e-02 | -1.327817e-03 | -1.564354e-03 | 9.348816e-03 |
| ## 8-389302 | -1.384386e-02 | -6.197454e-04 | -1.368704e-03 | 7.103794e-03 |
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| ## 8-389370 | 2.010983e-02 | 1.155002e-02 | 5.081312e-03 | -5.958180e-02 |
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| ## 8-389395 | -6.023966e-03 | -1.666304e-02 | -1.691787e-02 | -1.804497e-03 |
| ## 8-389507 | -1.768988e-02 | 1.637101e-02 | 1.986224e-02 | 1.207003e-02 |
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| ## 8-390383 | -9.118028e-03 | 1.558088e-02 | 2.391078e-02 | 1.548723e-03 |
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| ## 8-390599 | 2.039478e-02 | -1.950098e-02 | 1.813411e-03 | -4.730538e-02 |
| ## 8-390652 | -5.278312e-03 | 3.492865e-03 | 2.027819e-02 | 5.783251e-03 |
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| ## 8-390756 | -1.774608e-02 | 3.839715e-02 | 3.806653e-02 | 8.888404e-03 |
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| ## 8-390812 | -1.689536e-02 | -5.562990e-03 | 1.932228e-02 | 1.666550e-02 |
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## 8-391285 -9.444565e-03 -3.200686e-02 3.564365e-02 6.915659e-04
## 8-391303 -6.207916e-03 1.049145e-02 1.610853e-02 6.087088e-03
## 8-391332 -2.599939e-03 -7.455080e-02 1.061084e-02 3.866265e-02
## 8-391421 -2.927919e-02 -2.316419e-02 4.069541e-02 1.835117e-02
## 8-391522 -1.480184e-02 -1.480788e-02 1.783277e-02 -1.291674e-02
## 8-391545 -2.671355e-02 6.031790e-02 2.978671e-02 6.668294e-03
## 8-391555 2.775893e-02 -2.627524e-02 -1.984634e-03 -6.228738e-02
## 8-391595 -1.836020e-02 -1.801489e-02 2.570912e-02 -3.420995e-02
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## 8-391693 -2.807007e-02 1.348918e-02 1.256153e-02 2.621554e-02
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| ## 8-396446 | -6.860131e-03 | 6.822191e-03 | 3.266706e-02 | 1.000647e-02 |
| ## 8-396453 | -2.818548e-02 | -1.811630e-02 | 3.613652e-02 | -4.068588e-02 |
| ## 8-396529 | -6.631215e-03 | -2.061529e-02 | 2.005297e-02 | -1.152267e-02 |
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| ## 8-396807 | -1.910273e-02 | 3.684553e-03 | -5.930524e-02 | -6.377347e-03 |
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| ## 8-397200 | -2.339857e-02 | 3.665452e-02 | -1.006705e-02 | 4.389910e-03 |
| ## 8-397286 | 1.996252e-02 | 1.175220e-02 | 4.582270e-03 | -5.218953e-02 |
| ## 8-397327 | -2.706871e-02 | -6.680104e-03 | 2.302260e-02 | 2.533939e-02 |
| ## 8-397387 | -3.295110e-02 | 8.029060e-03 | -3.222790e-03 | 2.192535e-02 |
| ## 8-397473 | -2.706871e-02 | -6.680104e-03 | 2.302260e-02 | 2.533939e-02 |
| ## 8-397563 | 5.096991e-02 | 1.818777e-02 | -6.259210e-03 | 3.936204e-02 |
| ## 8-397579 | -1.627920e-02 | -7.087987e-02 | 8.745810e-03 | 4.638632e-02 |
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| ## 8-397641 | 6.926344e-02 | 5.324021e-02 | -1.455369e-02 | 3.911138e-02 |
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| ## 8-397705 | 1.765462e-02 | -6.217694e-03 | 1.388056e-03 | -4.542254e-02 |
| ## 8-397805 | 8.020493e-02 | -1.103184e-03 | -7.432890e-03 | -2.222596e-02 |
| ## 8-397817 | -1.627920e-02 | -7.087987e-02 | 8.745810e-03 | 4.638632e-02 |
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| ## 8-397961 | 1.272965e-02 | 2.189165e-02 | -8.576196e-03 | -1.704506e-02 |
| ## 8-398034 | -8.032951e-03 | -1.334777e-02 | 8.059865e-03 | -3.057929e-02 |
| ## 8-398053 | 1.333869e-02 | 2.342810e-02 | -9.613444e-03 | -1.716625e-02 |

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| ## 8-398085 | 8.184195e-02 | 1.378192e-02 | -1.063108e-02 | 4.150128e-02 |
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| ## 8-398114 | 1.765462e-02 | -6.217694e-03 | 1.388056e-03 | -4.542254e-02 |
| ## 8-398163 | 2.816751e-02 | -2.263010e-02 | -4.301840e-03 | -6.691096e-02 |
| ## 8-398273 | -1.557060e-02 | -1.518888e-02 | 1.548020e-02 | -2.285419e-03 |
| ## 8-398281 | -1.586341e-02 | 2.427890e-02 | 1.961944e-02 | 7.155742e-03 |
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| ## 8-398373 | -3.614218e-03 | -6.308490e-03 | 2.343602e-02 | -4.774661e-02 |
| ## 8-398427 | -3.893603e-02 | 2.802258e-02 | -1.084142e-01 | -1.510311e-02 |
| ## 8-398441 | -3.378162e-02 | 7.865158e-02 | 4.036870e-02 | 1.922849e-03 |
| ## 8-398468 | -2.181060e-02 | -4.875097e-02 | -1.770943e-02 | 6.661993e-03 |
| ## 8-398524 | -3.346605e-02 | -5.230052e-03 | 2.634878e-02 | 2.784936e-02 |
| ## 8-398527 | -8.821186e-03 | 8.962661e-03 | 3.585521e-02 | 1.325164e-02 |
| ## 8-398537 | -1.135170e-02 | 2.209568e-02 | -6.870490e-02 | -5.626714e-03 |
| ## 8-398623 | -8.438006e-04 | 1.995266e-02 | 2.016742e-02 | -1.261264e-02 |
| ## 8-398678 | -5.370309e-03 | -7.556298e-03 | 2.523545e-02 | -4.583429e-02 |
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| ## 8-398785 | 7.084223e-02 | 2.963703e-02 | -1.003722e-02 | 6.130751e-02 |
| ## 8-398797 | -1.752179e-02 | -6.609902e-03 | -4.612945e-02 | -6.448966e-03 |
| ## 8-398813 | -3.142368e-02 | 7.454153e-02 | 4.138028e-02 | 1.854701e-03 |
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| ## 8-399188 | 5.277366e-02 | 1.516727e-02 | -2.567753e-03 | 6.731620e-03 |
| ## 8-399231 | -7.401422e-03 | 1.735452e-02 | -6.265057e-02 | -7.412636e-03 |
| ## 8-399266 | 1.229033e-02 | 2.176661e-02 | -9.234928e-03 | -1.319210e-02 |
| ## 8-399304 | 8.065479e-02 | 1.188377e-02 | -1.079250e-02 | 3.960113e-02 |
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| ## 9-400402 | 3.142520e-02 | 3.166182e-02 | -5.901905e-03 | -6.434143e-02 |
| ## 9-400403 | -9.292978e-03 | -1.152982e-01 | 1.848368e-02 | 6.203808e-02 |
| ## 9-400422 | -2.134821e-02 | 2.041506e-02 | -1.921354e-02 | 4.675235e-03 |
| ## 9-400452 | -4.684273e-03 | 6.380411e-03 | -3.832841e-02 | -4.573669e-03 |
| ## 9-400491 | 6.414237e-02 | 1.287600e-02 | -7.695319e-03 | 3.426317e-02 |
| ## 9-400522 | -1.395575e-02 | 7.201777e-03 | 8.304714e-03 | 1.415140e-02 |
| ## 9-400543 | -1.314575e-02 | -7.118231e-02 | 1.023073e-01 | -6.177195e-02 |
| ## 9-400627 | -9.334079e-03 | 2.752003e-02 | -2.158032e-02 | -6.083481e-03 |
| ## 9-400677 | -1.377328e-02 | 4.016599e-02 | -5.050644e-02 | -7.465143e-03 |
| ## 9-400695 | -1.909632e-02 | 4.423993e-03 | 7.767957e-03 | 1.607587e-02 |
| ## 9-400734 | -1.814789e-02 | -3.476809e-03 | 7.359885e-03 | -2.405703e-02 |
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| ## 9-400858 | 5.476072e-02 | -1.047730e-02 | 4.804794e-03 | -6.917784e-02 |
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| ## 9-400978 | -1.025639e-02 | -9.258831e-03 | 3.324939e-02 | -1.753156e-02 |
| ## 9-400999 | 6.194879e-02 | 9.055565e-03 | -4.133413e-03 | 1.228930e-02 |
| ## 9-401012 | 1.455965e-02 | 8.135326e-03 | 4.047320e-03 | -3.817663e-02 |
| ## 9-401091 | 1.316862e-02 | -9.919705e-03 | -2.618215e-03 | -4.607602e-02 |
| ## 9-401166 | -7.076596e-03 | 9.748041e-03 | 2.641910e-02 | 6.932166e-04 |
| ## 9-401225 | -2.544217e-02 | 1.027375e-02 | 1.309683e-02 | 2.353263e-02 |
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| ## 9-401272 | -1.367838e-02 | -2.480809e-02 | -9.258429e-03 | 1.483618e-02 |
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| ## 9-401335 | -4.809746e-03 | 3.015139e-03 | 1.871017e-02 | 7.870041e-03 |
| ## 9-401483 | 3.444067e-02 | -8.424205e-04 | -5.596798e-03 | 1.033579e-02 |
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| ## 9-401530 | 2.580038e-02 | 1.194173e-02 | 7.302175e-03 | -2.935331e-02 |
| ## 9-401630 | -1.347003e-02 | 1.697204e-02 | 1.886923e-02 | -3.527597e-05 |
| ## 9-401702 | -8.181380e-03 | -1.636870e-02 | 3.137765e-02 | -2.412624e-02 |
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| ## 9-401845 | 6.291443e-05 | -1.397868e-02 | 2.171990e-02 | 6.571478e-05 |
| ## 9-401877 | -1.568685e-02 | 3.466112e-02 | 2.489699e-02 | 7.124282e-05 |
| ## 9-401888 | -2.207507e-03 | -9.090503e-03 | -2.815531e-02 | -4.178459e-03 |
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| ## 9-401986 | -3.503628e-02 | 1.326633e-02 | -1.293326e-01 | -1.203167e-02 |
| ## 9-402040 | 4.357525e-01 | -2.645092e-03 | 2.076633e-01 | -7.946361e-02 |
| ## 9-402091 | -4.015143e-03 | -2.426278e-02 | 2.079379e-02 | -4.627104e-03 |
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| ## 9-402143 | -7.277648e-03 | 1.056000e-02 | 2.260962e-02 | 6.370497e-04 |
| ## 9-402152 | -4.276081e-03 | -3.931995e-02 | -6.113881e-03 | -2.047326e-03 |
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| ## 9-402283 | -2.619131e-01 | 3.582707e-01 | -1.162242e-01 | -1.442327e-02 |
| ## 9-402324 | 1.752073e-01 | 1.477290e-01 | 2.904122e-02 | -4.784774e-02 |
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| ## 9-402762 | -6.810900e-03 | 7.336532e-03 | 2.884203e-02 | 7.616164e-03 |

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| ## 9-402771 | 3.062098e-02 | 2.334541e-03 | -1.366197e-03 | 4.146328e-03 |
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| ## 9-402876 | -2.083156e-02 | -1.314726e-02 | -4.928879e-02 | -6.628272e-03 |
| ## 9-402879 | -2.412992e-02 | -2.392822e-02 | -1.139024e-01 | -1.707706e-02 |
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| ## 9-403108 | 5.035821e-03 | -8.924917e-03 | 1.771891e-03 | -2.117295e-02 |
| ## 9-403147 | -1.504505e-02 | 3.772851e-02 | -5.898279e-02 | -5.477581e-03 |
| ## 9-403152 | -8.875910e-03 | -1.381712e-02 | 2.522350e-02 | -1.999788e-02 |
| ## 9-403178 | -3.541523e-02 | -8.331781e-03 | 3.456956e-02 | 3.150208e-02 |
| ## 9-403182 | -2.037373e-02 | 4.974485e-02 | 2.360862e-02 | 8.351470e-03 |
| ## 9-403219 | -1.868650e-03 | -1.340348e-02 | -4.891165e-02 | -8.125524e-03 |
| ## 9-403221 | 5.035821e-03 | -8.924917e-03 | 1.771891e-03 | -2.117295e-02 |
| ## 9-403246 | -7.794933e-03 | 1.145805e-02 | 2.179908e-02 | 9.197325e-04 |
| ## 9-403260 | -1.515876e-02 | -7.930858e-02 | -1.528072e-02 | -1.201688e-03 |
| ## 9-403281 | 6.538569e-02 | 1.315101e-02 | -5.063735e-03 | 2.694498e-02 |
| ## 9-403290 | 7.774030e-02 | -1.265149e-02 | 3.879918e-03 | -8.615438e-02 |
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| ## 9-403368 | 2.415710e-02 | 6.058735e-03 | -7.770079e-04 | -7.342306e-03 |
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| ## 9-403571 | -1.671860e-02 | 7.374177e-03 | 6.130388e-03 | 1.533843e-02 |
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| ## 9-403740 | 1.132923e-01 | -2.264078e-02 | 7.148247e-03 | -8.718201e-02 |
| ## 9-403842 | -1.445790e-02 | -1.030129e-02 | -2.669825e-02 | -1.119944e-02 |
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| ## 9-404455 | -4.541657e-03 | -6.847165e-02 | 1.079763e-02 | 3.418503e-02 |
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## 9-404588 -3.421517e-02 8.415964e-03 5.160227e-03 2.838450e-02
## 9-404612 -2.208245e-02 -2.730740e-03 2.058728e-02 2.012352e-02
## 9-404621 -4.083105e-01 1.483094e-01 -1.810413e-01 5.909358e-02
## 9-404627 -1.575113e-02 4.426358e-02 5.807634e-02 -5.592780e-03
## 9-404736 -1.882407e-02 -3.747905e-02 -1.334627e-02 1.895485e-02
## 9-404764 -1.750750e-02 -6.125476e-02 -1.572765e-02 1.282045e-02
## 9-404774 1.397419e-02 -1.102211e-02 3.256014e-03 -7.656821e-02
## 9-404813 6.615011e-02 -1.198759e-02 -9.351646e-04 -1.697210e-02
## 9-404817 -1.946804e-02 -7.822754e-03 -5.412704e-02 -7.571550e-03
## 9-404842 4.194591e-01 -4.290981e-02 1.869324e-01 -6.296459e-02
## 9-404872 -1.372041e-02 -4.936847e-03 3.820450e-03 -1.836301e-02
## 9-404912 -1.033820e-02 1.871642e-02 1.605445e-02 4.590955e-03
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## 9-404995 1.943897e-02 1.022933e-02 8.946632e-03 -3.733101e-02
## 9-405000 -2.037373e-02 4.974485e-02 2.360862e-02 8.351470e-03
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## 9-405010 -5.274484e-03 1.306366e-02 -2.794670e-02 -2.105617e-03
## 9-405044 8.023668e-02 1.831660e-02 -1.199179e-02 4.403227e-02
## 9-405071 1.461029e-03 -2.324025e-02 4.445910e-02 -1.534701e-02
## 9-405136 -1.731565e-02 -6.049142e-02 -1.569511e-02 1.260384e-02
## 9-405166 -3.989918e-02 3.322449e-02 5.898831e-02 3.291899e-02
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## 9-405270 -1.238121e-02 -3.743228e-03 1.138317e-02 1.010790e-02
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## 9-406310 -1.055329e-02 3.270901e-02 8.832379e-03 -9.923040e-03
## 9-406325 -1.334321e-02 2.376314e-02 -3.986366e-02 -8.328046e-03
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## 9-408324 -1.253245e-02 4.133655e-02 1.273317e-02 -1.202584e-02
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## 9-410561 -7.372157e-03 -7.607037e-03 2.034576e-02 -2.537951e-02
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## 9-410685    5.455827e-03 -1.296290e-02  1.186591e-03 -3.328731e-02
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## 9-411152    9.049930e-02 -1.455438e-02 -2.827715e-03 -6.261763e-02
## 9-411158   -1.497362e-02  3.856102e-02 -1.447260e-02 -3.670248e-03
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## 9-411898   -1.837588e-02  4.176276e-02  2.609821e-02 -3.099650e-05
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## 9-412525    3.835089e-02  1.120559e-02  5.486186e-03 -5.399946e-02
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| ## 9-413162 | -5.118241e-02 | -2.265630e-02 | -1.144026e-01 | -2.381794e-02 |
| ## 9-413258 | -1.266049e-02 | -5.755407e-02 | 5.822928e-03 | 3.629709e-02 |
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| ## 9-413333 | -4.622162e-03 | -2.916986e-02 | 2.220979e-03 | 4.995434e-03 |
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| ## 9-413377 | -4.622162e-03 | -2.916986e-02 | 2.220979e-03 | 4.995434e-03 |
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## 9-414892 3.230689e-02 3.761149e-03 7.592049e-04 -1.832361e-02
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## 9-414910 -1.902428e-02 4.328225e-02 2.713060e-02 -2.186316e-06
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## 9-415126 -2.033847e-03 -3.047453e-03 3.293162e-02 8.431622e-03
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| ## 9-425847 | -1.396645e-01 | -8.085152e-02 | 1.308475e-01 | 5.848539e-02 |
| ## 9-425909 | 4.087227e-02 | 1.659791e-02 | -6.072494e-03 | 3.361533e-02 |
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| ## 9-426265 | -3.363261e-02 | -1.614577e-02 | -7.939407e-02 | -1.232983e-02 |
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| ## 9-426459 | -2.576426e-02 | 9.935721e-03 | 1.233852e-02 | 2.274317e-02 |
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| ## 9-426738 | -9.350997e-03 | -2.515343e-02 | -5.409100e-03 | 5.381456e-03 |
| ## 9-426825 | -9.804970e-03 | 1.737307e-02 | 2.618504e-02 | 6.629682e-03 |
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| ## 9-429887 | -6.317361e-03 | 3.281193e-03 | 1.698914e-02 | 5.112616e-03 |
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| ## 9-430277 | -1.058605e-02 | 1.004585e-02 | -1.479996e-02 | 1.038631e-03 |
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## 9-432466 -7.759362e-03 -2.163777e-02 2.336575e-02 -9.531939e-03
## 9-432502 -1.098068e-02 -3.736468e-03 -3.892908e-02 -2.001835e-03
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## 9-434026 -2.326104e-02 3.231507e-02 -2.505196e-02 5.657909e-03
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| ## 9-434081 | -1.212657e-02 | -6.884267e-02 | 1.098969e-02 | 4.022080e-02 |
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| ## 9-434651 | -2.413569e-02 | 4.298961e-02 | -4.332128e-02 | -4.884551e-03 |
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| ## 9-434653 | -5.752004e-03 | 8.557264e-03 | 1.809235e-02 | 4.245700e-03 |
| ## 9-434770 | 1.407325e-01 | 2.303541e-02 | -1.763911e-02 | 7.206501e-02 |
| ## 9-434826 | 1.333689e-03 | -8.719073e-03 | 2.908510e-03 | -6.671788e-02 |
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| ## 9-435296 | 4.380604e-02 | -1.219654e-02 | 5.331848e-03 | -3.735001e-02 |
| ## 9-435325 | 3.096063e-02 | 1.480709e-02 | -5.379196e-03 | 2.827905e-02 |
| ## 9-435407 | -1.156839e-02 | 3.192626e-02 | 3.905700e-02 | -2.992536e-03 |
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| ## 9-435462 | 1.320372e-02 | -1.062215e-02 | -4.817114e-03 | -2.296552e-02 |
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| ## 9-435784 | -9.374550e-03 | 1.408030e-02 | -2.924721e-02 | -3.997621e-03 |
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| ## 9-436042 | 1.311979e-03 | -1.165075e-02 | 2.223923e-02 | -1.184330e-02 |
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## 9-436921 -1.239008e-02 1.201479e-02 9.845643e-03 1.102965e-02
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## 9-437035 -9.737592e-03 -2.537040e-02 -7.689924e-03 7.290198e-03
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## 9-437242 -4.336417e-02 -7.608201e-03 3.971706e-02 3.903472e-02
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| ## 9-438149 | -9.059064e-03 | -2.337712e-02 | -7.023142e-03 | 6.034413e-03 |
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| ## 9-439771 | 1.493943e-03 | -4.259300e-03 | -2.482036e-02 | -1.674524e-03 |
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## 9-440416 -1.942522e-02 4.684437e-02 3.146714e-02 -4.254424e-04
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| ## 9-444880 | -7.253565e-02 | 9.992568e-02 | -2.782912e-01 | -3.581017e-02 |
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## 10-460969 2.461047e-02 -8.902107e-03 2.530433e-02 -4.413191e-02
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## 10-461068 4.953863e-02 1.905862e-02 -8.389826e-03 3.207696e-02
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## 10-468327 -2.640160e-02 -1.208081e-02  8.103124e-03  1.475910e-02
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## 10-468736 -2.250722e-02 -1.605586e-03 -2.300358e-03  1.321751e-02
## 10-468786 -2.067877e-01 -2.322649e-01  1.205834e-01  1.337319e-01
## 10-468813 -1.502897e-02  1.565033e-03 -5.454968e-02 -4.418356e-03
## 10-468839  6.486823e-02  1.742284e-02 -8.922409e-03  3.750826e-02
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## 10-468879 -1.379691e-02 -3.396147e-02 3.924599e-02 -3.907487e-03
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## 10-468889_2 -1.379691e-02 -3.396147e-02 3.924599e-02 -3.907487e-03
## 10-468909 -9.527812e-03 2.492645e-02 -1.647962e-02 -3.854864e-03
## 10-468936 -5.055980e-02 -1.553212e-02 -7.681655e-02 3.242457e-03
## 10-468951 -3.572377e-02 -7.105141e-03 7.797799e-03 2.262377e-02
## 10-469034 -5.446922e-03 -1.126601e-02 1.679861e-02 -6.976354e-03
## 10-469053 -4.148864e-02 -2.524486e-02 2.383317e-02 9.473032e-03
## 10-469056 -1.888955e-02 3.569755e-02 5.442159e-02 -7.452262e-05
## 10-469106 -1.819190e-02 2.785813e-02 -1.212202e-02 6.684274e-03
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## 10-470057 -1.397749e-02 -1.743893e-02 1.451884e-02 -1.541858e-03
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## 10-470727 -2.129334e-01 3.451254e-01 1.351742e-01 5.250118e-02
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## 10-470919 3.979773e-02 4.763052e-03 -5.434321e-03 2.094784e-02
## 10-470945 6.217067e-02 1.252139e-02 1.209553e-03 -3.641213e-02
## 10-470974 -9.889742e-03 5.178144e-03 9.752031e-03 9.731131e-03
## 10-470988 -1.390695e-02 -1.789620e-02 -1.107947e-02 4.980263e-03
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## 10-471267 -2.174516e-02 -1.414730e-02 1.602437e-02 6.085128e-03
## 10-471274 -2.687080e-03 -1.086137e-02 4.973971e-05 -4.056283e-02
## 10-471296 -8.954780e-03 -5.022419e-02 4.552119e-02 -5.116732e-03
## 10-471323 4.729213e-03 -1.910865e-02 -2.254070e-02 -1.177546e-02
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## 10-471427 -1.455585e-02 2.925448e-02 4.108084e-02 -6.640498e-04
## 10-471451 -1.500206e-02 2.970190e-02 4.702853e-02 8.278419e-04
## 10-471562 -1.154486e-02 1.476196e-02 -2.798322e-02 -3.544499e-03
## 10-471578 -1.744893e-02 -5.461335e-02 5.361816e-02 -7.098470e-03
## 10-471597 -6.633333e-03 -4.464099e-02 3.917676e-02 -3.057692e-03
## 10-471623 1.960755e-02 8.124043e-03 2.930486e-03 -4.295295e-02
## 10-471666 -2.418958e-03 -2.144211e-02 3.506787e-02 -9.113423e-03
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## 10-471727 -2.729401e-02 -2.731328e-02 2.638030e-02 7.757645e-03
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## 10-471942 -8.364567e-03 -4.661600e-02 4.443446e-02 -4.366263e-03
## 10-471955 2.653781e-02 -9.869320e-03 4.189290e-03 -2.579373e-02
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## 10-472283 -1.404505e-02 3.362975e-02 2.065173e-02 -1.206835e-03
## 10-472319 1.364002e-02 6.316452e-03 2.536884e-03 -3.296368e-02
## 10-472379 -1.421159e-02 -1.793586e-02 -3.007337e-02 -8.255633e-03
## 10-472386 -1.529736e-03 3.305523e-03 -3.030470e-02 -3.207512e-03
## 10-472451 -2.318464e-02 -2.797290e-04 2.576095e-02 1.544899e-02
## 10-472511 -1.126605e-04 -3.263483e-02 5.655358e-02 -2.411699e-02
## 10-472527 -1.460735e-02 -1.869668e-02 -1.155378e-02 5.341654e-03
## 10-472548 -1.127888e-02 2.614614e-02 -3.320594e-02 -5.880068e-03
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## 10-472634 -9.856719e-03 -1.015226e-02 1.400304e-02 -1.305240e-02
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## 10-472941 2.546198e-02 6.189407e-03 2.831918e-03 -4.011688e-02
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## 10-473068    2.027969e-01  3.558989e-02  -1.246277e-02   3.403282e-02
## 10-473087   -1.331011e-02  5.799478e-03   6.589007e-03  1.176419e-02
## 10-473171   -2.240078e-02  3.726696e-02  -4.074251e-02 -2.560441e-03
## 10-473191    5.094288e-01  2.184578e-02  -4.404167e-02 -5.435888e-02
## 10-473199   -4.071273e-03  -5.586389e-02   1.300293e-02  3.315035e-02
## 10-473201   -1.854889e-03  -2.031805e-02   3.154685e-02 -8.212114e-03
## 10-473260   -3.024788e-03  -6.954083e-02   1.480669e-02  4.008707e-02
## 10-473271   -1.420499e-01  7.336149e-03  -3.659616e-01 -3.622811e-02
## 10-473296    3.433760e-02  9.849805e-04  -5.670647e-03  1.348196e-02
## 10-473360   -2.318464e-02  -2.797290e-04   2.576095e-02  1.544899e-02
## 10-473444   -1.554029e-02  3.767353e-02   2.079539e-02  8.414062e-04
## 10-473459   -1.854889e-03  -2.031805e-02   3.154685e-02 -8.212114e-03
## 10-473493    1.101689e-02  -1.851162e-02   1.789882e-03 -2.775037e-02
## 10-473497   -3.200573e-02  -1.100785e-02  -8.614264e-02 -1.250605e-02
## 10-473583   -1.886649e-02  -1.018754e-02   2.398185e-02 -2.447551e-02
## 10-473603   -5.853479e-02  -2.426426e-02  -1.060231e-01 -6.655741e-03
## 10-473620   -5.180223e-03  -5.212373e-03   3.582261e-02  3.593086e-03
## 10-473661   -2.650263e-02  5.703847e-02  -4.475799e-02 -9.626315e-03
## 10-473696   -2.515234e-02  -1.073925e-02   1.248376e-02  1.714904e-02
## 10-473851   -8.900987e-03  9.675032e-03  -6.685762e-02 -8.156152e-03
## 10-473862   -2.650263e-02  5.703847e-02  -4.475799e-02 -9.626315e-03
## 10-473923   -3.540361e-02  6.671351e-02  -1.116156e-01 -1.778247e-02
## 10-473926   -6.104941e-03  1.311853e-02  -4.965736e-02 -7.392353e-03
## 10-473984   -1.901269e-03  -3.576096e-02   9.333051e-04 -1.436397e-03
## 10-473999   -2.318464e-02  -2.797290e-04   2.576095e-02  1.544899e-02
## 10-474156    9.166639e-02  2.748089e-02  -8.079391e-03  3.737755e-02
## 10-474172   -2.494027e-02  -1.293228e-02   2.239073e-02  2.189326e-02
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## 10-474193    8.029959e-03  -1.894534e-02   6.071106e-03 -5.300756e-02
## 10-474253   -2.348338e-02  5.441921e-02   2.785106e-02  9.689189e-03
## 10-474296   -5.534339e-02  -2.307562e-02  -9.885928e-02 -5.022700e-03
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## 10-474304_2  -8.448175e-03  2.797089e-02  3.376348e-02 -5.557793e-03
## 10-474305   -2.144883e-02  1.208688e-02   1.370290e-02  2.007850e-02
## 10-474346   -4.768014e-03  2.758912e-03   2.212329e-02  2.546262e-03
## 10-474422    4.729213e-03  -1.910865e-02  -2.254070e-02 -1.177546e-02
## 10-474426    5.438988e-02  1.279578e-02  -3.749393e-03  2.342926e-02
## 10-474454    4.729213e-03  -1.910865e-02  -2.254070e-02 -1.177546e-02
## 10-474480    5.060772e-03  -1.389683e-02   1.797158e-03 -2.025871e-02
## 10-474491   -1.786240e-01  3.607206e-01   4.007215e-03  4.992064e-03
## 10-474652   -1.926572e-02  -5.002643e-02   4.729451e-02 -4.294076e-04
## 10-474661    2.622075e-02  4.581297e-03  -1.523275e-03 -7.637592e-03
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## 10-474715    1.216137e-02  -2.079692e-02   1.613560e-03 -3.658701e-02
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## 10-474807    3.989152e-03  1.459936e-02  -1.929151e-03 -2.065848e-02
## 10-474839    4.409437e-02  -9.333426e-03   6.173989e-03 -4.031079e-02
## 10-474930    2.308440e-02  5.318283e-03   6.659269e-05 -1.243573e-02
## 10-474939   -1.833890e-02  4.013326e-02  -3.081551e-02 -9.966440e-03
## 10-474986   -1.833890e-02  4.013326e-02  -3.081551e-02 -9.966440e-03
## 10-474995    1.105305e-02  3.076589e-02  -6.865007e-03 -3.662258e-02

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## 10-475106 -1.612472e-02 3.458191e-02 3.651073e-02 -5.814701e-03
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## 10-475245 5.333992e-02 -1.425895e-02 3.155580e-03 -4.784626e-02
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## 10-475407 -1.764116e-02 3.056716e-03 5.190138e-03 1.455869e-02
## 10-475444 -3.058258e-03 3.750283e-02 -6.501652e-02 -1.360096e-03
## 10-475473 -1.292929e-02 1.993584e-02 1.888702e-02 6.031445e-03
## 10-475488 -4.852431e-03 4.982941e-03 2.433295e-02 1.195230e-02
## 10-475711 -6.600930e-03 -9.830057e-05 4.443050e-04 -1.077023e-02
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## 10-475734 1.022222e-02 -9.250493e-03 -1.998237e-03 -3.198259e-02
## 10-475783 -2.374519e-02 -1.104906e-02 2.111586e-02 2.202532e-02
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## 12-559407 -1.946476e-02 -2.347558e-04 2.020551e-02 1.462363e-02
## 12-559461 2.871288e-02 -1.550727e-02 -3.306520e-03 -4.172161e-02
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## 12-560148  -1.163558e-02 -3.507324e-03  3.075382e-03 -1.022140e-02
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## 12-566030 6.255095e-02 2.534838e-02 -1.364436e-02 3.757361e-02
## 12-566067 4.019496e-02 9.702287e-03 -3.951754e-03 1.800940e-02
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## 12-573859 -1.459470e-02 -1.364275e-02 -2.074694e-02 -5.170647e-03
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## 12-574320  3.783164e-03   7.269168e-03  2.290676e-02 -7.693477e-03
## 12-574332  1.165048e-02  -8.546938e-03 -2.631794e-03 -2.926781e-02
## 12-574437  3.235527e-02   1.202730e-02 -4.453452e-03  2.670655e-02
## 12-574443  3.235527e-02   1.202730e-02 -4.453452e-03  2.670655e-02
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## 12-574514  -2.232901e-02  -1.102321e-01  1.558412e-03  5.625009e-02
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## 12-574871  -1.105570e-02  -2.382941e-03 -4.741964e-02 -2.867619e-03
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```

| | | | | |
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| ## 12-589008 | -1.827836e-02 | -5.836156e-03 | -3.479809e-02 | -3.319532e-03 |
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| ## 12-589034 | -1.353440e-02 | -7.802287e-02 | 9.770452e-02 | -2.850490e-02 |
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| ## 12-589535 | 3.820132e-03 | -1.121510e-02 | 3.120844e-03 | -3.015343e-02 |
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| ## 12-590587 | -2.144094e-02 | 4.891342e-03 | 6.805309e-03 | 1.733881e-02 |
| ## 12-590588 | 2.855144e-03 | 2.621292e-02 | 5.139904e-03 | -2.431773e-02 |
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| ## 12-590663 | -1.142655e-02 | -1.975499e-02 | -7.876092e-03 | 5.154845e-03 |
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## 12-590968 7.318775e-03 5.171116e-03 1.126897e-02 -9.245631e-03
## 12-590992 -2.559782e-02 -3.878496e-03 1.625034e-02 -7.128945e-03
## 12-591034 -1.859207e-02 4.484889e-02 3.194711e-02 2.733631e-04
## 12-591066 -1.161261e-02 9.647313e-03 1.417841e-02 8.091083e-03
## 12-591094 2.835697e-02 1.270502e-02 3.162961e-03 -4.107980e-02
## 12-591141 -7.264803e-03 5.081584e-03 -4.548714e-03 -1.017672e-02
## 12-591147 -1.329987e-02 3.271171e-02 1.020614e-02 -1.113288e-02
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## 12-591336 -2.752451e-02 -1.194567e-02 3.684766e-03 5.250704e-03
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## 12-591394 2.867632e-01 6.373540e-02 -5.389062e-02 1.464126e-01
## 12-591399 2.120579e-02 -1.606743e-02 -5.227959e-03 -6.331372e-02
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## 12-591416_2 -4.237332e-02 6.037444e-02 1.108146e-01 1.561509e-02
## 12-591554 2.115821e-02 -1.571388e-02 -4.750553e-03 -6.202720e-02
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## 12-591701 -3.115484e-03 -2.981907e-02 3.789151e-02 -2.565746e-02
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## 12-591912 -2.363162e-02 3.308574e-02 5.513600e-02 1.579986e-02
## 12-591933 -4.904446e-03 -3.854724e-03 3.667409e-02 7.965823e-03
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## 12-597186 -2.014694e-02 5.296813e-02 6.376607e-02 1.876566e-04
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## 13-611850 -2.451192e-02 3.672066e-02 3.833541e-02 1.110723e-02
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## 13-611997  9.958900e-05 -9.083609e-03 -4.095586e-02 -1.491939e-03
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## 13-612155 -1.125894e-03 -2.896972e-03  1.970774e-02  2.846084e-03
## 13-612203 -2.717253e-02 -1.231561e-02  2.465202e-02  2.304267e-02
## 13-612232  1.381441e-03 -9.782311e-03 -1.965788e-03 -2.918519e-02
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## 13-618894 8.107245e-02 1.092218e-02 -1.256822e-02 4.148470e-02
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## 13-619865 -2.999566e-02 -1.834042e-02 -6.469181e-02 -1.241368e-02
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## 13-619941 3.753027e-02 1.043503e-02 -5.417556e-03 2.304933e-02
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## 13-620366 -1.351682e-02 2.160864e-02 -4.416707e-02 -3.902591e-03
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## 13-632054 -1.733565e-02 3.891965e-02 1.877541e-02 8.695508e-03
## 13-632060 -8.912127e-03 1.575926e-02 2.740934e-02 -3.764834e-04

```

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## 13-632125  1.066898e-02  1.016148e-02 -2.173201e-03 -1.356877e-02
## 13-632158  1.837688e-02  5.344555e-03  3.639313e-03 -3.078354e-02
## 13-632174 -1.384914e-02  7.765681e-03  1.256216e-02  1.290894e-02
## 13-632190 -5.075873e-03 -2.640129e-02  4.300213e-02 -2.595354e-02
## 13-632216 -6.918043e-03  3.293422e-04  1.299323e-04 -1.000470e-02
## 13-632273 -3.137964e-03 -2.268383e-02  4.128940e-02 -3.126846e-02
## 13-632285  2.473033e-02  3.960851e-03  2.579912e-03 -1.853773e-02
## 13-632326 -1.560025e-02 -1.025635e-01  8.904535e-03  5.820509e-02
## 13-632356  5.729133e-02  1.473697e-02 -3.852570e-03  2.435452e-02
## 13-632373 -1.691872e-02  9.283099e-03 -4.259881e-02 -4.092095e-03
## 13-632383 -8.716108e-03  2.631486e-02 -3.548212e-02 -8.825377e-03
## 13-632613 -2.679262e-02 -2.129987e-02  3.330660e-02  1.872894e-02
## 13-632627 -1.635199e-02 -8.575790e-02  6.799991e-03  4.820338e-02
## 13-632634 -1.519279e-02 -4.202582e-02 -8.161636e-03  8.527368e-03
## 13-632746 -2.728817e-02  1.881757e-02  2.573535e-03  1.751548e-02
## 13-632785 -4.265422e-02 -6.426942e-03  3.401214e-03  2.386628e-02
## 13-632785_2 -2.732923e-01  3.028398e-01  8.517946e-02  8.468147e-02
## 13-632799 -3.637241e-02  8.829776e-02  5.329051e-02  1.165574e-02
## 13-632803 -6.918043e-03  3.293422e-04  1.299323e-04 -1.000470e-02
## 13-632820  2.410181e-02  3.580704e-03  2.485029e-03 -1.696108e-02
## 13-632850 -1.030711e-02 -3.192459e-02 -5.402719e-03  3.166001e-03
## 13-632859 -3.991982e-02 -2.328489e-02 -9.138580e-02 -1.712849e-02
## 13-632877 -1.864562e-02  3.965257e-02 -3.682835e-02 -8.423188e-03
## 13-632889  2.326478e-02  2.418379e-03  2.444316e-03 -2.282994e-02
## 13-632962  1.984044e-02  1.451936e-02  8.011686e-03  1.355480e-03
## 13-632986  5.064423e-02  9.805409e-03 -1.645848e-03 -2.784356e-03
## 13-633062  3.421891e-02 -4.860875e-03  4.147785e-04 -1.374047e-02
## 13-633075 -8.948923e-03 -7.727948e-02  8.965304e-03  3.572009e-02
## 13-633146 -1.575736e-02  2.965705e-02  4.789004e-02  2.767270e-03
## 13-633161  6.377277e-02  1.547242e-02 -3.729118e-03  2.293600e-02
## 13-633198  3.716972e-03  8.526805e-03  8.969016e-03 -2.541209e-02
## 13-633222 -1.264044e-03  6.709025e-03 -2.259553e-02 -2.352747e-03
## 13-633374  3.102293e-02 -1.990993e-03  1.402236e-02 -4.059643e-02
## 13-633382 -3.669362e-01  3.349558e-02  1.028609e-01  1.805663e-01
## 13-633411  3.444381e-02 -3.488084e-03  3.800419e-03 -4.585312e-02
## 13-633421 -1.071697e-01  2.151357e-01 -5.608826e-02 -1.840162e-02
## 13-633439 -3.623434e-01  2.000940e-01 -2.110305e-01 -6.788728e-02
## 13-633479 -4.619814e-03 -2.786425e-02  2.359293e-02 -9.334781e-03
## 13-633544 -2.576873e-02  5.999513e-03  1.324162e-03  1.664200e-02
## 13-633592  1.510452e-02 -1.338341e-02 -1.386523e-02 -1.794274e-02
## 13-633648  2.971958e-02  1.012662e-02  5.773614e-03 -4.473556e-02
## 13-633666 -2.168949e-02  4.997864e-02  2.402787e-02  1.139831e-02
## 13-633711 -7.730838e-03  2.430321e-02  2.246169e-02 -5.301650e-04
## 13-633771  4.591009e-03  2.703660e-02 -2.067843e-03 -3.162422e-02
## 13-633812 -3.093421e-02  5.507341e-02 -2.332074e-02 -4.217317e-04
## 13-633897  5.753743e-02  2.042215e-02 -8.951927e-03  4.007935e-02
## 13-633908  1.168699e-01  3.165419e-02 -1.497606e-02  7.226446e-02
## 13-633932 -8.763356e-03  1.647270e-02  2.360849e-02 -1.471158e-03
## 13-633979 -1.734094e-02  4.201314e-03  2.192813e-03  1.160455e-02
## 13-634000  1.011131e-01  3.233120e-02 -2.077227e-02  6.572851e-02
## 13-634061 -1.656118e-02  9.171452e-03 -4.130738e-02 -3.855617e-03
## 13-634068 -9.043070e-03  1.838183e-02  2.589841e-02 -1.881717e-03
## 13-634165 -1.089301e-02  1.105267e-02  1.289568e-02  1.027921e-02
## 13-634177 -2.168949e-02  4.997864e-02  2.402787e-02  1.139831e-02

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## 13-634191  8.718037e-03  1.228525e-02 -5.016692e-03 -1.270100e-02
## 13-634258 -1.822994e-02 -3.124886e-03 -3.732236e-02 -2.176118e-03
## 13-634259 -2.530710e-03 -8.792730e-02  1.181192e-02  3.419180e-02
## 13-634264 -7.290172e-03  1.854913e-02 -3.851578e-02 -6.146997e-03
## 13-634326 -1.273648e-02 -2.767086e-02 -4.047182e-03  1.853054e-02
## 13-634427 -1.224906e-03 -5.194932e-02 -2.341600e-02 -6.110497e-03
## 13-634438 -5.833575e-03 -5.540839e-03  2.485322e-02  7.493897e-03
## 13-634450 -8.289750e-03  1.396772e-02  2.788098e-02  6.287038e-03
## 13-634606 -1.820461e-02 -4.103910e-02  3.727325e-02 -1.339372e-02
## 13-634631  3.739528e-02  1.039094e-02 -1.932731e-03  6.208076e-03
## 13-634658  3.594870e-03 -1.193063e-02 -3.513192e-02 -2.880523e-03
## 13-634769 -4.749179e-03 -2.751873e-02  2.329967e-02 -9.403854e-03
## 13-634819 -2.168317e-02  3.053118e-03  3.606911e-03  1.364346e-02
## 13-634923  9.627384e-02  3.131517e-02 -1.415981e-02  6.673727e-02
## 13-634954 -1.972597e-02  5.115934e-02  5.096869e-02 -1.274038e-03
## 13-635021 -4.502904e-02 -4.533628e-02  9.273399e-02 -1.777379e-02
## 13-635078  6.362961e-02  1.738140e-02 -7.039667e-03  4.184656e-02
## 13-635142 -5.502852e-03 -3.017713e-02  2.579653e-02 -1.011343e-02
## 13-635185 -6.630935e-03 -1.043064e-02  1.947327e-02 -1.526869e-02
## 13-635188 -2.168949e-02  4.997864e-02  2.402787e-02  1.139831e-02
## 13-635216  3.076168e-02  1.184249e-02  1.015532e-03  2.601351e-02
## 13-635261 -4.767016e-03  7.814745e-03  2.583955e-02  7.538984e-03
## 13-635313 -2.779100e-02  6.579589e-02  1.371863e-02  6.113002e-03
## 13-635324 -1.025013e-02  1.307758e-02  2.801779e-02  2.618204e-03
## 13-635376 -9.560213e-03  2.313556e-02 -3.149955e-02 -3.399827e-03
## 13-635411  1.566518e-02 -5.565712e-03 -3.372332e-03 -2.360019e-02
## 13-635419 -3.836991e-02  9.634719e-02  8.289112e-02 -5.867211e-03
##                               RDA5      RDA6
## 1-8          3.509916e-03  2.687351e-02
## 1-27         1.184917e-03  2.559136e-03
## 1-34         1.978913e-02 -8.172068e-03
## 1-81         2.616596e-02 -2.472360e-03
## 1-97         1.391231e-02  4.642863e-03
## 1-153        -2.908730e-02 -3.785890e-03
## 1-154        -2.336484e-02 -2.028346e-02
## 1-206        2.100212e-02 -1.000499e-02
## 1-287        4.132311e-02  4.589480e-03
## 1-304        -2.539165e-02  2.409095e-02
## 1-346         4.434202e-03  6.625856e-02
## 1-364         2.145133e-03  1.407731e-02
## 1-368        -3.724299e-03  2.833990e-02
## 1-389        -2.147476e-02 -1.826978e-03
## 1-495         -3.482453e-02  6.294131e-02
## 1-508         -9.173939e-03 -3.811195e-03
## 1-525        -2.505172e-02 -2.209893e-02
## 1-585         2.440286e-03 -1.063418e-01
## 1-689        -4.785864e-03 -1.297683e-02
## 1-837        -2.184487e-03  4.350130e-03
## 1-846        -2.424882e-02 -2.089582e-03
## 1-869         -3.736935e-02  6.052416e-02
## 1-921        -3.634897e-03 -1.135027e-02
## 1-933        -3.442381e-03  3.885600e-02
## 1-1024       -1.309864e-02  1.727974e-02
## 1-1029       1.243575e-02  4.851342e-03

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## 1-1091      5.226532e-02 -2.825441e-02
## 1-1113      -3.036099e-02 -2.647022e-02
## 1-1155      -6.543116e-03  1.438974e-02
## 1-1161      5.226532e-02 -2.825441e-02
## 1-1224      1.243575e-02  4.851342e-03
## 1-1259      -1.421024e-02 -1.160139e-02
## 1-1301      -2.914567e-02  2.138615e-02
## 1-1317      -3.442381e-03  3.885600e-02
## 1-1349      4.720937e-02 -1.911876e-03
## 1-1357      1.766268e-02  6.211624e-03
## 1-1388      4.518759e-03  3.002335e-02
## 1-1444      1.765012e-02  1.059210e-02
## 1-1494      -1.615379e-02 -1.159140e-03
## 1-1499      -5.745656e-02 -2.821395e-03
## 1-1538      -1.905250e-02 -1.025028e-02
## 1-1566      -6.326088e-03 -3.034437e-03
## 1-1600      1.825909e-02  1.211874e-02
## 1-1635      1.316894e-03  4.369991e-03
## 1-1650      -6.483011e-02 -5.577805e-03
## 1-1685      -1.383572e-02  1.685445e-02
## 1-1731      -6.895788e-02 -6.509515e-03
## 1-1793      -1.966946e-02  6.102323e-02
## 1-1820      -1.172549e-02 -5.174619e-02
## 1-1823      -1.383572e-02  1.685445e-02
## 1-1851      1.957439e-03 -4.601196e-03
## 1-1863      -6.851941e-03 -1.437957e-02
## 1-1903      -2.040290e-02 -1.351774e-02
## 1-1928      -1.686800e-02 -7.983269e-03
## 1-1928_2    -1.905250e-02 -1.025028e-02
## 1-1936      -6.604676e-02 -5.855633e-03
## 1-1955      1.562357e-02  3.382976e-03
## 1-1983      1.951221e-02  1.381194e-02
## 1-1995      2.087460e-03  1.391995e-02
## 1-2035      -8.001293e-03  1.746650e-02
## 1-2061      2.700956e-03  8.628353e-03
## 1-2085      1.178476e-02  4.547222e-03
## 1-2102      -1.577264e-02 -9.811940e-03
## 1-2115      1.711134e-03 -2.764235e-02
## 1-2131      1.867283e-03  1.178510e-02
## 1-2191      -4.954119e-04  7.482889e-03
## 1-2228      2.402839e-03  1.459007e-02
## 1-2272      2.102128e-03  4.160692e-03
## 1-2293      1.790663e-02  1.220106e-02
## 1-2315      1.516920e-02  7.029457e-03
## 1-2374      2.402839e-03  1.459007e-02
## 1-2402      -1.920124e-03 -4.791367e-03
## 1-2443      -6.709967e-04  6.787750e-03
## 1-2494      2.163398e-03  7.540411e-03
## 1-2524      -1.690397e-02 -1.349358e-03
## 1-2573      5.214973e-02 -1.282407e-02
## 1-2594      -2.475437e-02  6.615472e-02
## 1-2628      8.166739e-02 -2.035957e-02
## 1-2664      2.301444e-02 -5.243387e-02
## 1-2782      -1.544640e-02  1.616780e-03

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## 1-2833      -1.544640e-02  1.616780e-03
## 1-2890      -3.095363e-02  -6.160712e-04
## 1-2938       8.642557e-03   4.018532e-02
## 1-2954      -1.641644e-04  -7.927775e-03
## 1-2998      -1.719252e-02  -3.313073e-03
## 1-3065      -8.835084e-03   1.340856e-02
## 1-3072      -2.326468e-04  -8.069265e-03
## 1-3185      -6.847270e-04  -8.499356e-03
## 1-3216      -1.147219e-03  -2.289634e-02
## 1-3221       6.985767e-02  -5.725285e-02
## 1-3258       1.909233e-02  -3.007335e-03
## 1-3293      -2.794461e-02  -6.160056e-03
## 1-3308       2.084704e-03   1.040384e-02
## 1-3328       1.086407e-03   3.986138e-03
## 1-3343      -2.794461e-02  -6.160056e-03
## 1-3391       6.005452e-03   1.809890e-02
## 1-3447       1.492597e-03  -5.884511e-03
## 1-3588      -2.690726e-03  -8.291082e-03
## 1-3629       5.649828e-02  -2.978299e-02
## 1-3637      -1.313882e-02  1.258270e-02
## 1-3690       2.180586e-02  -1.867721e-03
## 1-3738      -4.517415e-02  1.527285e-02
## 1-3757       1.246212e-02  -2.176881e-03
## 1-3827       2.449970e-02  -3.063041e-02
## 1-3837      -1.037442e-02  1.787582e-02
## 1-3883      -3.938413e-03   4.399461e-02
## 1-3885       6.751893e-04   8.538607e-03
## 1-3888      -1.259948e-03   3.155928e-03
## 1-3967      -2.661544e-02  -6.184072e-03
## 1-3994      -1.037442e-02  1.787582e-02
## 1-4046      -2.356434e-02  -1.504167e-02
## 1-4194      -2.642225e-02  1.898588e-02
## 1-4234      -7.056576e-03  -1.434858e-02
## 1-4251       3.578242e-02  8.870536e-03
## 1-4270       2.170676e-02  -1.734216e-03
## 1-4278      -4.637070e-04  -8.794869e-03
## 1-4280      -3.061402e-03  4.715471e-02
## 1-4335      -1.505647e-03  9.817545e-03
## 1-4340      -1.505647e-03  9.817545e-03
## 1-4349      -1.505647e-03  9.817545e-03
## 1-4479      -1.163300e-02  1.512734e-02
## 1-4485       7.192536e-02  -8.066050e-03
## 1-4759       1.816074e-03   4.649378e-03
## 1-4796      -9.926083e-03  -4.466670e-03
## 1-4847       4.873609e-02  1.866196e-02
## 1-4879       2.489458e-02  3.800413e-02
## 1-4883      -1.891730e-02  -1.992672e-03
## 1-4952      -7.056576e-03  -1.434858e-02
## 1-4987      -4.942578e-03  4.954641e-02
## 1-5005      -1.333715e-02  1.760029e-02
## 1-5074      -1.058694e-03  8.401311e-03
## 1-5087       2.614259e-02  3.740820e-03
## 1-5156      -5.584967e-02  -9.731507e-03
## 1-5158      -4.230236e-02  3.149499e-03

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## 1-5232      1.347898e-02  3.418390e-02
## 1-5270      -2.107808e-02  1.112467e-02
## 1-5274      -9.346228e-03  1.093301e-02
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## 1-5315      1.903867e-02  -3.654652e-02
## 1-5336      -4.180777e-02  7.913859e-03
## 1-5374      -4.162550e-03  -1.367655e-02
## 1-5376      -1.032900e-02  -6.771368e-03
## 1-5399      -1.853069e-02  -6.540823e-03
## 1-5411      -5.343134e-02  -1.014330e-02
## 1-5411_2    2.165910e-02  -3.653739e-02
## 1-5456      1.166035e-02  2.347571e-02
## 1-5494      3.847859e-03  -9.097846e-03
## 1-5543      -3.110195e-02  2.488944e-03
## 1-5570      4.675494e-03  2.984404e-03
## 1-5588      5.086432e-03  3.278065e-02
## 1-5647      -5.082388e-02  -1.092578e-02
## 1-5679      1.903867e-02  -3.654652e-02
## 1-5680      -3.257684e-02  -7.698243e-05
## 1-5687      -4.305311e-03  -1.612802e-04
## 1-5781      -8.731827e-03  2.960924e-02
## 1-5843      -8.668549e-05  -2.019645e-02
## 1-5861      4.722320e-03  -5.972206e-03
## 1-5874      6.284924e-03  6.273610e-03
## 1-5896      -2.530591e-02  -1.995530e-03
## 1-5957      1.074821e-02  4.629997e-03
## 1-6071      4.937707e-03  1.069542e-02
## 1-6116      -2.525716e-02  1.333512e-02
## 1-6230      -9.318285e-03  1.030107e-02
## 1-6236      -3.274059e-02  -1.407500e-02
## 1-6245      -1.204273e-02  4.334938e-02
## 1-6262      1.253733e-02  2.290629e-03
## 1-6433      8.497445e-03  -2.912520e-02
## 1-6588      7.422396e-02  -1.658288e-02
## 1-6703      9.796628e-03  7.382983e-03
## 1-6787      -1.423440e-02  -6.044193e-02
## 1-6891      -1.463004e-03  1.414089e-02
## 1-6928      -2.143880e-02  -1.072420e-02
## 1-6956      -1.974504e-02  -1.347741e-03
## 1-6998      -7.432205e-03  6.064778e-04
## 1-6999      -2.758179e-02  -4.662883e-03
## 1-7048      -1.602680e-02  -3.156145e-03
## 1-7072      -8.742957e-02  -1.012250e-01
## 1-7089      -2.020401e-02  4.225746e-04
## 1-7089_2    1.497800e-02  -6.306055e-03
## 1-7094      -4.565154e-03  -1.144534e-02
## 1-7117      -3.413855e-02  -3.655437e-02
## 1-7182      -3.205657e-03  2.343816e-02
## 1-7237      -1.602680e-02  -3.156145e-03
## 1-7251      1.577674e-03  -4.245556e-03
## 1-7281      -2.960806e-03  5.057450e-04
## 1-7304      -2.953296e-02  -9.842675e-03
## 1-7309      2.372241e-02  7.327172e-03
## 1-7315      1.435138e-02  -1.008237e-02

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## 1-7344      1.519978e-01 -2.291960e-02
## 1-7348      1.435138e-02 -1.008237e-02
## 1-7386      -2.128252e-02 -2.862476e-02
## 1-7437      1.696228e-02  3.722032e-02
## 1-7465      -9.631921e-04 -1.243698e-02
## 1-7487      -4.597228e-02 -3.412980e-02
## 1-7572      -4.794626e-03  2.136735e-02
## 1-7581      1.505993e-02  3.116712e-02
## 1-7616      5.417013e-03 -4.881712e-03
## 1-7670      1.117483e-02  4.051150e-03
## 1-7683      2.639966e-02  1.430886e-03
## 1-7718      -9.143062e-02  3.290633e-02
## 1-7725      -2.874902e-02  1.213836e-02
## 1-7732      -5.522944e-03 -1.308519e-02
## 1-7760      5.742441e-03 -1.733816e-03
## 1-7798      -2.986582e-04 -8.318211e-03
## 1-7819      1.961807e-02 -7.077214e-03
## 1-7852      2.711226e-02  1.088806e-02
## 1-7880      3.424634e-02 -4.584850e-02
## 1-7897      -3.205657e-03  2.343816e-02
## 1-7998      -2.031734e-02  4.261502e-02
## 1-8005      -6.253379e-03  6.396541e-02
## 1-8017      4.271352e-03  3.307148e-03
## 1-8055      -3.205657e-03  2.343816e-02
## 1-8074      3.715952e-02  1.148853e-02
## 1-8108      3.103913e-02  1.517817e-02
## 1-8187      -8.048033e-04 -1.180205e-02
## 1-8236      2.174345e-03  4.145763e-03
## 1-8239      -4.584117e-03  8.825000e-03
## 1-8243      4.578284e-03  3.026957e-02
## 1-8317      5.065234e-02 -3.474690e-02
## 1-8356      -2.508424e-02 -5.474286e-03
## 1-8413      -4.373402e-04 -8.612897e-03
## 1-8430      -8.161745e-03 -4.981679e-02
## 1-8474      -3.425368e-03  2.199423e-02
## 1-8486      4.943464e-06 -2.554195e-02
## 1-8487      -6.931534e-04 -1.108234e-02
## 1-8599      2.385687e-02  2.317352e-02
## 1-8613      4.887402e-03 -6.268287e-03
## 1-8623      3.250841e-03  3.643543e-03
## 1-8641      3.819236e-02 -1.552852e-02
## 1-8651      1.227406e-02  2.656440e-03
## 1-8716      -4.962887e-03 -9.897646e-03
## 1-8765      -4.951973e-04 -1.178769e-02
## 1-8844      1.595243e-03  9.206055e-03
## 1-8857      7.616736e-03 -2.066049e-03
## 1-8896      -7.913789e-03 -8.589838e-03
## 1-8933      9.331107e-03  2.018713e-02
## 1-9078      -2.836916e-02 -2.961265e-04
## 1-9086      1.022300e-02  3.441961e-02
## 1-9087      9.646516e-03  2.153379e-02
## 1-9123      -3.865062e-02  3.290482e-02
## 1-9153      -9.372166e-03  1.231064e-02
## 1-9155      2.299031e-02  2.305049e-02

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## 1-9266      -1.800327e-02  1.387510e-02
## 1-9280      4.429833e-03  -1.308076e-02
## 1-9341      5.114848e-03  1.754193e-02
## 1-9626      -5.477907e-03  -1.118552e-02
## 1-9666      -8.389891e-03  -6.055768e-03
## 1-9684      -1.366355e-02  1.279802e-02
## 1-9698      -5.971891e-03  -1.176445e-02
## 1-9705      -2.697886e-02  -1.360234e-02
## 1-9762      7.636928e-03  8.753383e-03
## 1-9775      -1.563571e-02  -1.239607e-02
## 1-9812      -3.973283e-02  -6.301238e-03
## 1-9829      -7.412593e-03  -1.638283e-02
## 1-9859      -4.768114e-02  -6.247270e-03
## 1-9928      -6.839055e-04  1.022461e-02
## 1-9997      -8.737324e-03  -1.570500e-03
## 1-10005     -4.122836e-03  5.121642e-02
## 1-10038     4.879210e-03  -6.924405e-03
## 1-10095     -2.791667e-03  2.509657e-02
## 1-10124     -2.200894e-02  2.103795e-02
## 1-10133     -8.576443e-03  1.333095e-02
## 1-10175     2.928559e-02  1.921351e-02
## 1-10181     -2.011825e-02  -1.645991e-02
## 1-10209     -7.553790e-03  -1.156924e-02
## 1-10313     -8.992458e-03  1.452782e-02
## 1-10372     -4.893217e-03  -2.895652e-02
## 1-10439     1.146348e-03  -7.158905e-03
## 1-10462     -2.850616e-03  -7.047519e-04
## 1-10531     -2.472595e-03  2.813215e-02
## 1-10535     3.199388e-02  -2.685400e-02
## 1-10541     1.029092e-02  5.615958e-03
## 1-10573     2.818497e-03  1.331938e-03
## 1-10573_2   -3.035945e-02  -1.454601e-02
## 1-10719     3.462270e-02  -2.128457e-02
## 1-10732     -6.348577e-03  -1.267603e-02
## 1-10738     3.199388e-02  -2.685400e-02
## 1-10790     -8.640055e-02  -1.334179e-02
## 1-10824     -8.992458e-03  1.452782e-02
## 1-10902     -3.499607e-02  -2.783459e-02
## 1-10902_2   3.832998e-03  7.837272e-04
## 1-10929     1.184083e-03  6.488179e-03
## 1-10989     3.956393e-03  3.173987e-04
## 1-10994     3.560410e-02  -1.899899e-02
## 1-11014     4.169294e-02  -2.397191e-02
## 1-11014_2   2.282042e-02  -1.033955e-02
## 1-11063     -1.945747e-02  -2.063238e-02
## 1-11268     1.497147e-01  5.691943e-02
## 1-11315     4.623295e-03  -3.499196e-03
## 1-11334     -4.095738e-02  -4.555831e-03
## 1-11339     -1.016287e-03  -7.434445e-03
## 1-11366     7.045582e-03  4.980809e-02
## 1-11369     1.783724e-02  1.712820e-02
## 1-11455     3.665474e-02  -2.154809e-02
## 1-11469     -8.189533e-03  -2.006919e-03

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## 1-11499      -8.620198e-03 -9.453238e-03
## 1-11525      2.159123e-02 -4.181830e-02
## 1-11525_2    2.248327e-02  3.439209e-02
## 1-11667      7.898127e-03  1.117479e-02
## 1-11680      -7.462990e-03  1.738935e-02
## 1-11706      -6.711230e-06  -4.517053e-03
## 1-11731      -1.047569e-02  5.077112e-04
## 1-11788      5.016872e-03  9.400044e-05
## 1-11789      -4.019032e-02  -4.858523e-03
## 1-11885      -1.119540e-02  1.905715e-02
## 1-11899      -7.693775e-03  5.372017e-03
## 1-11927      -1.023289e-02  1.378023e-02
## 1-11935      2.465604e-02  -4.730824e-02
## 1-11935_2    1.783724e-02  1.712820e-02
## 1-11991      5.306025e-03  -8.155406e-04
## 1-12041      4.902743e-03  -8.641923e-04
## 1-12062      3.760546e-03  7.532871e-03
## 1-12113      1.783724e-02  1.712820e-02
## 1-12222      3.760546e-03  7.532871e-03
## 1-12327      -3.560428e-03  -8.535039e-03
## 1-12356      8.492686e-03  1.202943e-02
## 1-12365      1.609377e-03  -4.247066e-03
## 1-12439      2.628618e-03  1.820856e-03
## 1-12561      1.388600e-02  3.838364e-04
## 1-12572      2.965626e-02  6.985234e-03
## 1-12636      -4.456814e-03  -2.897733e-02
## 1-12681      -3.039134e-02  2.073390e-02
## 1-12704      2.233913e-02  -1.860671e-02
## 1-12713      -9.333000e-04  -2.660989e-02
## 1-12770      1.567372e-02  7.543123e-03
## 1-12784      1.173805e-02  -3.516595e-03
## 1-12827      1.902501e-02  5.654427e-03
## 1-12959      7.760160e-02  -6.362892e-04
## 1-13069      8.177228e-03  -4.019891e-04
## 1-13165      -8.678207e-03  6.829689e-02
## 1-13169      3.299540e-02  7.012611e-02
## 1-13211      -3.045267e-02  -5.452667e-03
## 1-13507      1.257760e-02  2.258341e-03
## 1-13616      -9.369720e-03  -4.318274e-03
## 1-13748      1.997225e-02  3.383610e-03
## 1-13748_2    1.228350e-03  -3.361595e-03
## 1-13839      -1.061040e-02  2.393405e-02
## 1-13885      -1.608853e-03  -1.381798e-02
## 1-13887      -1.154089e-02  -8.921666e-03
## 1-13959      6.543363e-03  -1.364132e-03
## 1-14000      2.395283e-02  4.066109e-03
## 1-14005      -1.253946e-02  1.370190e-02
## 1-14071      -1.218942e-03  -1.453307e-02
## 1-14072      -2.257650e-02  -3.355339e-02
## 1-14078      -1.218942e-03  -1.453307e-02
## 1-14163      5.047728e-03  2.481667e-03
## 1-14187      -1.699715e-02  -1.404746e-02
## 1-14251      7.385091e-02  -9.234472e-02
## 1-14269      -2.681092e-02  -5.522127e-03

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## 1-14275      -3.638262e-02 -1.718501e-03
## 1-14287      -1.368839e-03  8.743808e-03
## 1-14287_2    -1.103109e-03 -1.410596e-02
## 1-14397      -5.799609e-02 -1.497762e-02
## 1-14403      2.776002e-02  3.214646e-02
## 1-14459      1.881183e-02  8.041066e-03
## 1-14546      -3.264930e-02 -4.672286e-03
## 1-14609      -1.699715e-02 -1.404746e-02
## 1-14612      -3.148194e-02 -1.328811e-03
## 1-14670      -2.173817e-02 -2.618557e-02
## 1-14764      -2.714731e-02 -2.174808e-03
## 1-14769      2.480639e-02 -8.843518e-03
## 1-14795      1.257760e-02  2.258341e-03
## 1-14820      2.923081e-02  3.152138e-02
## 1-14876      -2.243977e-02 -1.041179e-02
## 1-14940      1.612751e-02  1.352544e-03
## 1-15035      4.528504e-03  1.986167e-03
## 1-15044      -2.111468e-02  4.478165e-03
## 1-15058      -1.130339e-03  9.742431e-03
## 1-15123      1.346792e-02 -3.873625e-02
## 1-15163      1.919978e-02  7.932666e-03
## 1-15174      -1.130339e-03  9.742431e-03
## 1-15186      -9.030928e-03 -2.288049e-03
## 1-15192      4.697553e-02 -1.812270e-02
## 1-15217      -2.313452e-02 -1.112513e-02
## 1-15309      -1.142669e-02 -7.797355e-03
## 1-15336      1.886797e-02  3.970716e-02
## 1-15357      1.109660e-02 -3.788536e-02
## 1-15397      1.458790e-02  5.449593e-03
## 1-15418      3.635874e-02  4.429662e-03
## 1-15447      1.138971e-02 -3.773247e-02
## 1-15448      -1.130339e-03  9.742431e-03
## 1-15544      1.593591e-02  2.195413e-03
## 1-15551      -1.130339e-03  9.742431e-03
## 1-15578_2    -4.752508e-03 -1.480283e-02
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## 1-15628      1.556182e-03 -1.509982e-02
## 1-15660      -8.152502e-03  9.873427e-03
## 1-15704      9.623581e-03 -4.091784e-02
## 1-15742      -1.038424e-03  1.039303e-02
## 1-15783      -3.306174e-02  2.098742e-02
## 1-15808      -1.038424e-03  1.039303e-02
## 1-15827      -3.453851e-02  2.961209e-02
## 1-15835      4.852166e-04  2.570034e-03
## 1-15876      7.103220e-03 -4.617578e-03
## 1-15876_2    -3.203158e-02 -1.907515e-02
## 1-15883      -1.775629e-02  4.769299e-03
## 1-16005      7.424992e-02  4.313126e-03
## 1-16029      7.424992e-02  4.313126e-03
## 1-16033      -1.291737e-02  1.065975e-02
## 1-16127      4.644294e-02 -4.119415e-02
## 1-16233      3.903270e-02 -3.682225e-02
## 1-16267      -5.158077e-03 -1.609748e-02
## 1-16272      1.302085e-02  4.665840e-03

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## 1-16295      -1.030978e-02  2.305778e-02
## 1-16305      1.769726e-03  3.640084e-03
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## 1-16349      1.456290e-03  -2.406909e-03
## 1-16423      1.456290e-03  -2.406909e-03
## 1-16448      1.965719e-02  -1.321912e-03
## 1-16473      3.476584e-04   7.544334e-04
## 1-16483      4.130996e-03   3.776675e-04
## 1-16491      1.946196e-03   -6.701962e-03
## 1-16499      8.379990e-03   -2.093660e-03
## 1-16550      2.333224e-02   4.521734e-02
## 1-16583      -5.985286e-03   5.303550e-02
## 1-16609      -4.866816e-03   -1.526119e-02
## 1-16769      -9.266113e-03   1.154009e-02
## 1-16866      6.783065e-03   1.946436e-02
## 1-16879      3.135046e-03   -1.715254e-03
## 1-16926      -1.385400e-02   1.735875e-02
## 1-16942      1.362778e-02   8.507159e-03
## 1-16965      1.382075e-02   5.270666e-03
## 1-16983      -2.687598e-02   2.423088e-02
## 1-17003      1.804560e-02   8.288638e-03
## 1-17051      -6.058319e-03   5.810484e-03
## 1-17102      1.992011e-02   9.233074e-03
## 1-17136      -9.472201e-04   -2.318952e-02
## 1-17163      4.644294e-02   -4.119415e-02
## 1-17318      -3.955684e-03   -1.385236e-02
## 1-17351      3.160246e-03   -1.200320e-03
## 1-17363      -2.716510e-02   -2.896527e-02
## 1-17434      -2.782793e-02   -4.286613e-03
## 1-17436      -2.608990e-02   6.804135e-03
## 1-17511      1.979993e-02   9.292988e-03
## 1-17619      1.561260e-02   5.784980e-03
## 1-17622      2.428389e-02   4.417033e-02
## 1-17632      -4.255488e-03   2.745095e-02
## 1-17675      1.999217e-02   -5.147057e-02
## 1-17771      -3.043015e-03   -1.819941e-02
## 1-17795      -2.716510e-02   -2.896527e-02
## 1-17890      -1.845723e-02   4.010909e-02
## 1-17919      1.784796e-02   3.008642e-03
## 1-17926      -6.075434e-03   -7.289554e-02
## 1-17948      2.705424e-03   -6.952688e-04
## 1-17985      -5.985975e-04   -8.336128e-03
## 1-18015      -2.933145e-02   -9.544789e-03
## 1-18030      -2.479578e-02   2.237911e-02
## 1-18047      5.566448e-03   -5.769905e-03
## 1-18114      2.042151e-02   1.069094e-02
## 1-18133      -1.721810e-02   2.065681e-03
## 1-18164      5.730507e-03   -2.138632e-03
## 1-18199      -2.948999e-02   -4.154050e-02
## 1-18226      2.027731e-03   -1.304393e-02
## 1-18231      1.148253e-02   7.270870e-03
## 1-18269      -2.678025e-02   2.150168e-02
## 1-18286      1.749047e-02   9.271726e-03
## 1-18369      2.322639e-02   8.260399e-03

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## 1-18417      4.932151e-03  1.180113e-04
## 1-18428      8.857455e-03  -2.109748e-02
## 1-18438      1.451171e-03  -2.954735e-03
## 1-18489     -4.155570e-02  -6.699759e-03
## 1-18490     -9.769124e-03  -3.415626e-02
## 1-18519      2.975516e-02  1.373319e-02
## 1-18560     -9.250255e-03  -3.139957e-02
## 1-18597      2.727355e-03  -1.734071e-03
## 1-18615      1.293882e-02  7.512821e-03
## 1-18623     -6.991132e-03  5.010838e-02
## 1-18658      2.027731e-03  -1.304393e-02
## 1-18665      2.039599e-03  -3.076138e-02
## 1-18695      7.969303e-03  7.230519e-02
## 1-18721      1.670246e-03  -1.253823e-02
## 1-18774     -2.716510e-02  -2.896527e-02
## 1-18813     -2.744482e-02  -1.454818e-02
## 1-18827      1.225338e-02  2.722900e-02
## 1-18862     -1.597069e-02  2.488607e-02
## 1-18929      1.451171e-03  -2.954735e-03
## 1-18943     -2.744482e-02  -1.454818e-02
## 1-19028     -7.381133e-03  -4.999591e-03
## 1-19057     -2.027659e-02  -6.862847e-03
## 1-19062     -1.400895e-03  4.945046e-03
## 1-19081      2.215452e-03  5.472370e-03
## 1-19087     -1.687949e-02  4.648869e-02
## 1-19135     -9.761621e-03  3.356111e-03
## 1-19143      2.428751e-04  -6.717894e-03
## 1-19179     -2.756082e-02  -4.574595e-04
## 1-19213     -1.962594e-02  2.875659e-02
## 1-19243     -1.181789e-03  -8.729368e-03
## 1-19251     -2.404334e-02  -9.216814e-03
## 1-19347     -2.337256e-02  -8.717564e-03
## 1-19412     -1.447913e-02  4.162068e-02
## 1-19432     -2.795627e-03  8.007354e-03
## 1-19544      8.711937e-04  -5.640906e-03
## 1-19546      1.577980e-02  5.397157e-03
## 1-19590     -1.022718e-02  1.122821e-02
## 1-19617     -1.367290e-02  3.716042e-02
## 1-19702      7.886441e-02  -4.000253e-02
## 1-19704     -2.948999e-02  -4.154050e-02
## 1-19704_2    1.210902e-02  -4.922494e-03
## 1-19734      4.003966e-03  -8.053276e-04
## 1-19818      5.422974e-04  -1.167653e-02
## 1-19864      1.152769e-02  2.229035e-03
## 1-19898     -6.996331e-03  5.782511e-02
## 1-19932     -1.071250e-02  3.446165e-02
## 1-19985     -2.415715e-02  -2.632744e-02
## 1-20027     -1.951230e-02  8.480979e-04
## 1-20037     -2.927793e-02  3.614491e-02
## 1-20102     -1.367290e-02  3.716042e-02
## 1-20136     -2.406694e-02  -4.388628e-03
## 1-20184      3.709394e-02  8.540641e-03
## 1-20220      1.081981e-02  1.866020e-02
## 1-20238     -9.216695e-03  -3.924780e-03

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## 1-20241      1.421593e-02  2.727836e-02
## 1-20260      1.110800e-02  3.322665e-03
## 1-20282      4.433353e-03  -2.480918e-02
## 1-20300     -1.826452e-02  3.766476e-02
## 1-20348     -2.157722e-02  -2.199694e-02
## 1-20357     -1.834190e-02  1.045058e-03
## 1-20423     -4.408237e-02  -3.690581e-02
## 1-20431      3.857821e-03  -5.929510e-04
## 1-20460      5.658912e-05  9.836200e-04
## 1-20475     -6.615771e-03  1.122003e-02
## 1-20490     -7.860006e-03  4.999853e-03
## 1-20613     -2.948999e-02  -4.154050e-02
## 1-20628     -4.916727e-03  7.129648e-03
## 1-20629     -2.991640e-02  -2.868694e-03
## 1-20641     -1.710320e-03  -1.132184e-02
## 1-20688      9.607386e-03  1.150281e-02
## 1-20700     -4.644122e-05  -6.560884e-02
## 1-20733     -8.871133e-03  -5.469764e-03
## 1-20789      5.249284e-04  8.611411e-03
## 1-20840     -3.078766e-03  -1.188790e-02
## 1-20860      3.618321e-02  -1.929860e-02
## 1-20872     -8.224524e-03  6.123787e-02
## 1-20911     -1.574587e-03  -1.152845e-02
## 1-21038      1.170992e-02  4.125234e-02
## 1-21041     -1.283640e-02  2.603781e-02
## 1-21057     -7.470764e-03  -5.910351e-03
## 1-21102     -1.347034e-02  1.552708e-02
## 1-21117     -3.204613e-03  -1.890150e-02
## 1-21144     -7.426903e-03  -1.639921e-02
## 1-21200     -2.468591e-02  -8.657222e-03
## 1-21217      1.809637e-03  -2.303766e-02
## 1-21266      2.991482e-02  2.466433e-02
## 1-21437      1.107264e-03  -1.531634e-02
## 1-21492     -4.953955e-02  -3.513039e-02
## 1-21551     -1.546013e-02  4.122564e-02
## 1-21585     -6.728950e-03  -2.726644e-03
## 1-21624      1.107264e-03  -1.531634e-02
## 1-21645      2.146088e-03  1.502131e-02
## 1-21715     -2.973277e-03  -4.004150e-02
## 1-21808     -1.831742e-02  1.187144e-03
## 1-21867     -1.664417e-03  -1.524065e-02
## 1-21901     -4.438669e-03  -2.735706e-02
## 1-21993     -2.818404e-02  2.470674e-02
## 1-21995     -8.039210e-03  2.414177e-03
## 1-22012      1.997859e-02  4.984281e-03
## 1-22015     -1.827636e-02  4.687172e-02
## 1-22022     -2.889351e-02  -3.008626e-02
## 1-22118      4.818934e-02  -1.788821e-02
## 1-22145      1.329514e-02  -4.329837e-02
## 1-22208     -6.085238e-03  1.730505e-03
## 1-22217      7.310783e-03  -1.082772e-02
## 1-22242     -9.919860e-03  -1.195016e-02
## 1-22317     -8.990814e-02  -3.420711e-02
## 1-22406     -7.040807e-04  -5.291508e-03

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## 1-22434      1.135329e-02  2.459075e-03
## 1-22449      -8.990814e-02 -3.420711e-02
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## 1-22494      2.827445e-03  -1.157486e-02
## 1-22696      -6.659134e-02 -3.924547e-02
## 1-22760      1.143764e-03  -2.740087e-02
## 1-22789      4.474557e-04  -4.636831e-03
## 1-22803      5.782085e-03  -4.401729e-03
## 1-22842      -1.472755e-03 -1.881648e-02
## 1-22902      -8.205105e-02  8.066614e-03
## 1-22916      5.782085e-03  -4.401729e-03
## 1-22933      -1.598311e-02  6.842818e-04
## 1-22964      9.046026e-03  -3.521659e-03
## 1-23000      2.699625e-02  2.675013e-02
## 1-23017      1.601549e-02  5.997603e-03
## 1-23021      -1.267096e-02 -1.061401e-02
## 1-23053      2.024404e-02  4.519604e-03
## 1-23081      9.046026e-03  -3.521659e-03
## 1-23123      -4.112254e-03  2.311409e-03
## 1-23163      4.027453e-03  -1.115946e-02
## 1-23234      -1.668018e-02  3.315848e-02
## 1-23236      1.670977e-02  -2.255835e-02
## 1-23278      -3.595532e-02  -2.338393e-02
## 1-23285      9.148099e-02  -3.677239e-02
## 1-23397      3.319484e-03  8.042024e-03
## 1-23407      -1.354166e-02  -7.915744e-03
## 1-23417      1.377019e-02  3.296094e-03
## 1-23471      -4.664045e-03  -2.663044e-02
## 1-23495      2.955026e-02  1.122583e-02
## 1-23497      -4.071132e-02  -2.879646e-02
## 1-23551      -3.214056e-02  -3.680817e-02
## 1-23564      -1.354166e-02  -7.915744e-03
## 1-23590      -2.163620e-02  -9.919786e-03
## 1-23590_2    -1.593588e-02  1.278223e-03
## 1-23605      1.405192e-02  -1.079285e-02
## 1-23650      -3.961833e-02  -3.633771e-02
## 1-23695      1.196490e-02  2.544639e-03
## 1-23736      5.448541e-03  2.508768e-03
## 1-23775      -3.214056e-02  -3.680817e-02
## 1-23796      -9.066787e-03  -3.204322e-02
## 1-23838      -9.461507e-03  -3.672189e-04
## 1-23848      -6.652825e-03  5.060131e-02
## 1-23870      -6.478749e-03  1.260977e-02
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## 1-23884      -5.115891e-03  2.559567e-03
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## 1-24008      -3.372514e-02  -3.347267e-02
## 1-24079      4.290004e-02  -4.513980e-02
## 1-24117      -2.004567e-02  2.961816e-02
## 1-24132      1.879849e-02  -1.540338e-03
## 1-24141      -2.684266e-03  -6.757462e-03
## 1-24179      2.663759e-02  3.251298e-02
## 1-24285      -2.684266e-03  -6.757462e-03

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## 1-24285_2      1.048650e-02  5.404384e-03
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## 1-24379      2.196080e-03  9.448437e-03
## 1-24422     -1.377263e-02 -1.440645e-02
## 1-24576      3.049063e-02  2.940955e-02
## 1-24619     -6.466875e-02 -3.200062e-02
## 1-24623     -8.747830e-03  1.336250e-02
## 1-24630     -3.083076e-02  6.866860e-03
## 1-24659      1.938813e-02  7.699982e-04
## 1-24668     -6.606900e-03  5.886493e-02
## 1-24674     -2.344254e-03 -2.240559e-02
## 1-24726      2.879735e-02  3.363732e-02
## 1-24784      4.851689e-04 -4.823172e-03
## 1-24855     -4.925898e-05  8.948070e-03
## 1-24922     -1.377263e-02 -1.440645e-02
## 1-24940     -4.967941e-03 -2.461972e-02
## 1-24964     -5.607391e-03  4.274453e-03
## 1-24967      5.499330e-02 -5.009346e-02
## 1-25115     -1.845717e-03  2.213139e-03
## 1-25149     -2.963424e-02 -2.812905e-02
## 1-25161     -3.088759e-05 -3.559310e-03
## 1-25177     -6.435706e-03  4.607808e-02
## 1-25266      9.884142e-03  4.884074e-03
## 1-25269     -1.680904e-02 -1.363870e-02
## 1-25289     -6.809290e-02 -3.179521e-02
## 1-25324      1.031299e-01 -2.194635e-02
## 1-25363     -5.460637e-03  1.044103e-04
## 1-25376      2.954193e-03  6.907190e-03
## 1-25392     -1.603285e-02  4.709351e-02
## 1-25424     -6.765504e-04 -2.799583e-02
## 1-25577     -9.149692e-02 -3.049140e-02
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## 1-25982      1.769645e-02  1.195385e-02
## 1-26017      9.292314e-03  7.266813e-03
## 1-26044     -1.526488e-03 -2.965513e-02
## 1-26116      1.807312e-03 -5.443095e-03
## 1-26161     -1.688616e-02  2.044405e-02
## 1-26162      2.094151e-02  5.364379e-03
## 1-26219     -7.815568e-03 -4.346158e-03
## 1-26291     -1.633011e-02 -1.294849e-02
## 1-26337      3.641046e-03  1.564123e-02
## 1-26350     -3.569873e-03  1.054612e-03
## 1-26383      2.047347e-02  5.388544e-03
## 1-26386     -1.296537e-03 -2.965672e-02
## 1-26425     -6.610301e-02 -2.534156e-02
## 1-26462     -2.196341e-02  1.487369e-05
## 1-26466     -1.357406e-03 -1.264684e-02
## 1-26552     -1.151463e-02  2.383403e-03
## 1-26593      1.143569e-02  9.210349e-03
## 1-26595      5.019562e-03  4.109094e-03
## 1-26617     -1.329580e-02 -2.439421e-04
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## 1-26674      3.421246e-03  1.504620e-02

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## 1-26746 -7.253642e-03 1.987526e-03
## 1-26771 6.789187e-03 -5.513667e-03
## 1-26799 4.249542e-04 3.013909e-03
## 1-26879 -2.410425e-02 2.061707e-02
## 1-26881 8.578467e-03 1.225318e-02
## 1-26899 -2.538663e-02 1.931742e-02
## 1-26920 -2.970815e-02 2.452733e-02
## 1-27027 -7.900531e-03 1.060360e-02
## 1-27044 2.457072e-03 -2.443876e-02
## 1-27060 -4.626413e-02 -1.169399e-02
## 1-27085 4.400994e-05 2.146436e-02
## 1-27093 -3.408402e-03 -1.697776e-02
## 1-27118 4.249542e-04 3.013909e-03
## 1-27136 -3.978945e-03 1.141079e-02
## 1-27155 5.022427e-03 1.520932e-02
## 1-27256 4.720037e-04 -4.708000e-03
## 1-27268 2.794681e-02 6.410177e-03
## 1-27332 5.976609e-04 -3.538381e-03
## 1-27350 3.639595e-04 -5.235484e-03
## 1-27380 5.727186e-02 -2.556538e-02
## 1-27428 3.709028e-03 -2.821886e-03
## 1-27435 3.975111e-03 1.789689e-02
## 1-27476 -3.624068e-02 -5.955213e-03
## 1-27492 7.046755e-03 2.413540e-02
## 1-27538 5.441057e-03 2.058688e-03
## 1-27564 -1.067346e-02 2.270626e-02
## 1-27612 5.505402e-03 3.817614e-03
## 1-27658 1.402543e-02 3.221662e-03
## 1-27664 -1.203722e-03 -1.823056e-02
## 1-27680 5.037749e-03 5.778327e-04
## 1-27727 5.037749e-03 5.778327e-04
## 1-27732 4.100626e-02 -3.656900e-02
## 1-27783 5.126934e-03 -7.156247e-03
## 1-27839 -1.954918e-02 1.436123e-03
## 1-27849 -3.397816e-02 7.693853e-02
## 1-27894 -4.296790e-02 3.625628e-03
## 1-27929 -2.779393e-02 -7.132911e-04
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## 1-28009 -5.698419e-03 3.968285e-03
## 1-28095 3.119185e-02 2.995547e-02
## 1-28133 5.438826e-02 -4.717153e-02
## 1-28134 5.398139e-03 -2.422832e-03
## 1-28134_2 -2.221324e-03 -2.061859e-02
## 1-28187 -1.580714e-02 3.384595e-02
## 1-28198 2.142789e-04 -2.440384e-03
## 1-28247 -8.513310e-04 -3.431025e-03
## 1-28276 1.524362e-02 5.051981e-03
## 1-28309 3.662956e-03 -1.267451e-02
## 1-28309_2 1.005847e-02 -1.229995e-03
## 1-28342 -8.513310e-04 -3.431025e-03
## 1-28430 5.031128e-03 -1.877862e-02
## 1-28441 -8.324495e-03 1.552272e-02
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## 1-28577       1.081779e-02  5.384847e-05
## 1-28626      -3.364774e-03  5.220165e-03
## 1-28627      -2.361415e-02  -1.608098e-02
## 1-28721      -3.726208e-02  -5.453891e-03
## 1-28835      -8.513310e-04  -3.431025e-03
## 1-28849       1.340910e-02  3.720322e-03
## 1-28893      -3.108974e-02  2.747748e-02
## 1-28921       5.007488e-02  5.903407e-03
## 1-28923      -4.460593e-02  -1.842039e-03
## 1-28967       8.051070e-02  -4.687026e-02
## 1-29035      -8.555712e-03  1.700948e-02
## 1-29086      -1.782197e-02  -8.325488e-03
## 1-29159      -6.765426e-03  -1.418825e-02
## 1-29173       9.345728e-03  1.843574e-02
## 1-29184      -6.106700e-03  3.892584e-02
## 1-29207      -6.220079e-03  2.978757e-02
## 1-29211      1.448179e-02  3.978740e-03
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## 1-29566      1.436282e-02  -8.040994e-03
## 1-29631      -3.401333e-03  1.729008e-02
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## 1-29793      -5.228357e-03  -9.425430e-04
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## 1-29969      -3.306371e-03  -1.989785e-02
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## 1-31140      2.495125e-02  6.564217e-03
## 1-31144      -1.800357e-02  5.131832e-02
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## 1-31269      -4.395788e-02  4.995175e-03
## 1-31273      -1.800357e-02  5.131832e-02
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## 1-31319      -6.415111e-02  2.353432e-02
## 1-31325      -1.067699e-02  -1.365561e-02
## 1-31426      -6.248886e-03  2.578762e-04
## 1-31463      1.081956e-02  6.176454e-03
## 1-31478      3.179537e-03  -1.174796e-02
## 1-31485      1.304032e-03  1.105222e-03
## 1-31487      2.073920e-02  -3.482200e-02
## 1-31558      1.550813e-02  -8.416204e-03
## 1-31649      1.781758e-02  -1.412914e-02
## 1-31694      8.653468e-02  -3.997736e-02
## 1-31726      -1.610533e-02  1.017624e-02
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## 1-31797      -2.104793e-04  -5.285977e-03
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## 1-32056      -3.482854e-03  -7.288524e-04
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## 1-32127      -6.926851e-02  1.381107e-03
## 1-32142      3.495576e-02  -3.511616e-02
## 1-32194      -1.043230e-01  -1.592604e-02
## 1-32273      -1.514390e-03  -3.190598e-02
## 1-32345      2.201881e-03  -2.905139e-03
## 1-32353      3.692249e-02  -4.252640e-02
## 1-32408      -3.963959e-02  -4.261404e-03
## 1-32418      1.710284e-02  2.514246e-03
## 1-32545      4.037255e-04  7.762059e-03
## 1-32546      2.812365e-02  1.069552e-02
## 1-32643      -3.444733e-02  -2.288898e-03
## 1-32654      2.713714e-02  1.032487e-02
## 1-32655      -2.959492e-03  -3.255115e-02

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## 1-32687      4.197558e-02  1.138693e-02
## 1-32699      -4.733627e-02  4.223113e-03
## 1-32705      -2.037176e-02  8.472066e-03
## 1-32721      1.309603e-02  2.182895e-03
## 1-32730      3.495576e-02  -3.511616e-02
## 1-32831      -1.053558e-03  -3.451088e-03
## 1-32845      4.685503e-03  -3.847440e-03
## 1-32869      3.486497e-04  1.061897e-02
## 1-32915      4.685503e-03  -3.847440e-03
## 1-32962      -5.246081e-03  -2.049678e-02
## 1-32968      3.948877e-03  2.839199e-02
## 1-33027      -1.940565e-02  7.736961e-03
## 1-33032      4.138000e-03  1.461376e-02
## 1-33035      -1.060049e-03  -5.016645e-03
## 1-33064      -3.993097e-02  -4.055978e-03
## 1-33071      -6.534980e-03  -4.112334e-03
## 1-33087      3.932340e-02  -3.008508e-03
## 1-33092      -1.394276e-02  8.783784e-03
## 1-33165      9.472791e-03  6.467838e-03
## 1-33245      4.177945e-02  -5.322951e-02
## 1-33274      -7.058684e-03  -1.463087e-02
## 1-33291      3.756796e-02  -1.982389e-03
## 1-33302      -7.058684e-03  -1.463087e-02
## 1-33337      -5.570756e-02  -3.554254e-03
## 1-33345      3.985824e-02  -1.390529e-02
## 1-33351      8.273513e-03  3.263073e-03
## 1-33374      3.985824e-02  -1.390529e-02
## 1-33416      7.250254e-03  5.245036e-03
## 1-33432      3.591784e-03  6.561650e-04
## 1-33442      -2.462179e-02  -1.929139e-02
## 1-33458      1.590213e-02  6.761335e-03
## 1-33499      1.856175e-02  3.240550e-02
## 1-33540      1.021076e-02  6.016131e-03
## 1-33551      -1.566986e-02  -4.831692e-02
## 1-33615      -3.658805e-02  -3.920903e-03
## 1-33663      4.177945e-02  -5.322951e-02
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## 1-33744      1.541743e-02  -8.054012e-03
## 1-33829      -1.030374e-03  -2.002420e-02
## 1-33893      -2.051688e-03  7.860731e-03
## 1-33895      1.195792e-02  5.319151e-03
## 1-33941      -1.030374e-03  -2.002420e-02
## 1-34021      -1.584133e-02  -7.189049e-03
## 1-34022      -9.969970e-03  2.312819e-02
## 1-34034      1.694362e-02  2.705536e-03
## 1-34088      8.092887e-03  2.918872e-03
## 1-34141      3.495576e-02  -3.511616e-02
## 1-34161      -8.175227e-03  2.853348e-03
## 1-34217      2.176759e-02  2.524387e-04
## 1-34222      1.105500e-03  -2.862464e-03
## 1-34223      -1.797029e-01  3.142478e-02
## 1-34263      1.541743e-02  -8.054012e-03
## 1-34273      -7.300808e-03  -1.515701e-02
## 1-34390      9.472791e-03  6.467838e-03

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## 1-34654      8.817991e-03  3.309816e-03
## 1-34680     -3.665127e-02  6.853967e-05
## 1-34687     -1.865402e-02  -1.462256e-02
## 1-34727     -5.993731e-03  -1.611494e-02
## 1-34731      3.054443e-02  -1.504014e-02
## 1-34737      2.993015e-02  -1.878905e-02
## 1-34851      8.817991e-03  3.309816e-03
## 1-34856      3.397019e-02  -3.442252e-02
## 1-34860      9.746408e-03  1.600821e-03
## 1-34924      2.429913e-02  -2.989261e-02
## 1-34939      1.186911e-02  3.214148e-03
## 1-34986      2.429913e-02  -2.989261e-02
## 1-34987      3.912949e-03  1.460061e-02
## 1-34989     -9.015628e-03  -6.060484e-02
## 1-35012      1.549730e-03  5.171227e-03
## 1-35022      2.170461e-02  -4.078710e-02
## 1-35041      3.087777e-02  -1.680042e-02
## 1-35058      1.741814e-03  -2.322762e-02
## 1-35064      1.608603e-02  2.762945e-03
## 1-35079      7.282418e-02  2.034391e-02
## 1-35119     -2.387689e-02  -1.258116e-02
## 1-35132     -2.571719e-02  1.240428e-02
## 1-35173     -3.389969e-02  -2.272139e-02
## 1-35210      1.747315e-02  1.639814e-02
## 1-35344     -2.497292e-02  -2.909488e-02
## 1-35368     -7.300808e-03  -1.515701e-02
## 1-35410     -2.073149e-03  8.929434e-03
## 1-35413     -2.387689e-02  -1.258116e-02
## 1-35423     -2.173542e-03  -9.077956e-03
## 1-35437     -6.825336e-03  -2.703532e-02
## 1-35442     -2.571719e-02  1.240428e-02
## 1-35448      6.966136e-02  2.784715e-03
## 1-35538      8.961927e-03  -1.514162e-03
## 1-35560      3.742328e-03  1.761876e-03
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## 1-35607     -1.439457e-02  -1.649246e-02
## 1-35651     -1.120084e-03  3.736800e-02
## 1-35663      4.777807e-03  -2.709198e-03
## 1-35792      7.399511e-03  -1.061788e-03
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## 1-35916     -9.978694e-03  2.094023e-02
## 1-35965     -2.563728e-02  2.831049e-05
## 1-35996     -7.729069e-03  3.672838e-02
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## 1-36133      3.642021e-02  -3.395816e-02
## 1-36237      1.026966e-01  3.300623e-03
## 1-36278     -3.451317e-02  -2.365579e-02
## 1-36383      7.458446e-02  -4.964035e-02
## 1-36392      5.121650e-03  -4.754789e-03
## 1-36428     -2.457242e-02  -2.758431e-02
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## 1-36451      7.568995e-04  -3.279612e-03

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## 1-36497_2    -4.147915e-04  -6.892529e-03
## 1-36499      3.320417e-03  2.094753e-02
## 1-36507      9.156580e-03  -2.829774e-02
## 1-36525      2.181249e-02  3.619298e-04
## 1-36540      -2.775587e-02  -6.051965e-03
## 1-36586      3.642021e-02  -3.395816e-02
## 1-36599      -1.753414e-04  2.252127e-02
## 1-36663      -3.032416e-02  -1.969709e-02
## 1-36712      -5.425607e-03  4.312380e-03
## 1-36719      1.201270e-02  2.473253e-02
## 1-36754      3.452472e-03  -1.315046e-05
## 1-36768      3.559125e-03  1.351611e-03
## 1-36820      3.559125e-03  1.351611e-03
## 1-36822      1.309740e-02  -2.690495e-03
## 1-36844      3.559125e-03  1.351611e-03
## 1-36884      -1.835305e-02  4.298840e-02
## 1-36956      2.719730e-03  -1.089057e-02
## 1-37031      -1.761951e-03  1.577063e-03
## 1-37037      9.476708e-04  -1.348998e-03
## 1-37046      1.072583e-02  -2.977256e-02
## 1-37064      -6.797321e-03  1.386539e-02
## 1-37074      -2.298020e-02  1.444729e-02
## 1-37089      -1.089793e-02  1.520704e-02
## 1-37115      9.944644e-03  -3.392164e-03
## 1-37138      -1.058361e-02  6.047504e-03
## 1-37255      7.166435e-03  -1.104980e-03
## 1-37263      1.503370e-02  -3.605066e-03
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## 1-37356      7.779049e-03  -1.123560e-03
## 1-37392      5.788910e-03  -1.976197e-03
## 1-37409      1.512625e-02  6.033645e-03
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## 1-37440      1.811875e-02  -4.091103e-02
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## 1-37746      -1.880834e-03  -9.241608e-03
## 1-37757      -2.701359e-02  3.373070e-03
## 1-37788      -2.630540e-02  -1.659642e-02
## 1-37898      2.737515e-02  4.458852e-03
## 1-37957      -4.422469e-02  -1.729535e-03
## 1-37963      -6.920342e-03  8.570937e-03
## 1-38021      -2.988437e-02  -4.622832e-03
## 1-38085      1.589492e-02  -4.747223e-04
## 1-38117      7.755837e-04  -6.445081e-03
## 1-38120      -1.244511e-02  6.297823e-03
## 1-38173      -3.678568e-02  -8.739540e-03
## 1-38253      6.705980e-03  5.632289e-03
## 1-38311      8.972396e-04  -1.769357e-03

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## 1-38450      4.158240e-02  6.542417e-03
## 1-38472      -3.311081e-02  1.790898e-02
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## 1-38495      -4.322293e-04  7.462088e-03
## 1-38496      -3.353243e-02  -1.575260e-03
## 1-38503      8.929941e-03  1.116444e-02
## 1-38611      -2.733775e-03  3.179344e-02
## 1-38620      1.401474e-03  -8.597574e-04
## 1-38696      1.401474e-03  -8.597574e-04
## 1-38748      2.781688e-02  4.830447e-03
## 1-38797      4.376345e-03  7.431353e-03
## 1-38800      -1.254505e-02  -4.416137e-02
## 1-38823      -2.702677e-02  -2.246077e-02
## 1-39027      -3.008845e-03  3.144380e-02
## 1-39077      -2.395236e-02  -6.523181e-03
## 1-39120      7.965067e-03  3.922847e-03
## 1-39145      4.444064e-03  6.947745e-03
## 1-39154      -9.290601e-03  2.769319e-02
## 1-39159      2.104070e-02  -6.430333e-03
## 1-39182      2.452643e-03  1.049327e-02
## 1-39213      2.180169e-02  4.032029e-03
## 1-39241      1.913468e-03  -7.085384e-03
## 1-39248      4.444064e-03  6.947745e-03
## 1-39294      1.986106e-02  -5.642957e-03
## 1-39298      -9.058945e-03  5.689926e-04
## 1-39337      -1.392354e-02  3.788105e-03
## 1-39391      1.452230e-02  4.887239e-03
## 1-39400      4.340501e-02  -3.272506e-02
## 1-39423      -3.781306e-03  2.424639e-02
## 1-39429      1.452230e-02  4.887239e-03
## 1-39471      1.364212e-02  -1.348445e-02
## 1-39544      -4.248219e-02  -8.315368e-03
## 1-39576      -6.800678e-03  -1.413757e-02
## 1-39642      8.325131e-02  -4.082406e-02
## 1-39648      -4.807067e-02  -3.207547e-02
## 1-39714      -1.612724e-02  3.888143e-02
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## 1-39839      8.576274e-02  -3.326377e-04
## 1-39890      -2.556625e-02  1.155493e-02
## 1-39896      -8.073623e-03  1.551559e-02
## 1-39936      -4.681036e-03  -5.908285e-02
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## 1-40185      -1.310319e-02  2.658390e-03
## 1-40191      1.762301e-02  5.221084e-03
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## 1-40282      3.143752e-02  -2.938305e-02
## 1-40286      5.510760e-03  -3.080273e-03
## 1-40288      1.762301e-02  5.221084e-03
## 1-40311      -1.117342e-02  5.247423e-02
## 1-40380      4.871261e-03  -2.932332e-03
## 1-40424      1.426910e-02  4.339647e-03
## 1-40538      1.818405e-02  4.055230e-03

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## 1-40549 -4.001901e-03 -1.229847e-02
## 1-40568 -1.161455e-03 -5.263494e-03
## 1-40578 2.296661e-02 -2.049024e-03
## 1-40613 5.878830e-03 1.625536e-03
## 1-40622 -1.548660e-02 3.617737e-03
## 1-40682 8.576274e-02 -3.326377e-04
## 1-40702 1.604962e-02 2.612003e-03
## 1-40720 -8.797660e-03 -3.083311e-03
## 1-40765 -2.669525e-02 -1.428595e-02
## 1-40774 2.050961e-03 -2.116327e-03
## 1-40784 -2.618353e-02 -2.590102e-02
## 1-40785 2.869692e-02 -1.222531e-02
## 1-40868 -1.683057e-02 6.665274e-02
## 1-40873 4.607590e-02 -5.659380e-02
## 1-40935 -2.155991e-02 -9.177052e-04
## 1-40956 -2.465244e-02 2.145418e-02
## 1-41079 2.638966e-02 7.449550e-03
## 1-41253 -2.642519e-02 1.400209e-02
## 1-41254 2.006327e-03 -1.512577e-03
## 1-41257 -2.490450e-02 -1.465886e-02
## 1-41258 1.420559e-03 -8.514163e-03
## 1-41293 -4.800187e-02 -4.514850e-02
## 1-41309 4.563187e-02 -1.695449e-02
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## 1-41420 -2.136072e-02 7.124887e-03
## 1-41442 -1.965940e-02 2.812957e-04
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## 1-41663 8.933026e-03 2.720269e-02
## 1-41691 -4.896165e-03 -1.421225e-02
## 1-41744 1.293251e-02 1.141561e-03
## 1-41747 -4.717548e-02 -4.351564e-02
## 1-41771 -2.669606e-02 -2.828832e-02
## 1-41773 3.232740e-03 1.294841e-02
## 1-41777 -2.893270e-02 -6.900595e-03
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## 1-42182 -6.802116e-03 1.344735e-02
## 1-42298 6.338085e-02 -4.375527e-02
## 1-42331 6.348860e-03 2.285928e-02
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## 1-42764 5.667382e-03 -9.002876e-03
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## 1-42852 1.510380e-02 -1.464875e-03
## 1-42903 6.550069e-02 -6.944157e-02
## 1-42904 -1.712539e-02 -6.031654e-02
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## 1-43108 2.214144e-02 -2.135967e-03

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## 1-43114      1.238859e-02  3.677283e-03
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## 1-43149      -8.135593e-03 -3.403239e-03
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## 1-43391      -2.986300e-02  3.436944e-02
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## 1-43593      8.383052e-02  1.137573e-03
## 1-43623      2.808476e-03  -5.339467e-03
## 1-43655      1.140552e-02  2.305689e-02
## 1-43774      3.906929e-02  -3.346758e-02
## 1-43776      -5.523099e-03 -1.239748e-02
## 1-43854      1.622021e-03  2.785517e-03
## 1-43862      1.908349e-03  2.705034e-02
## 1-43888      -2.518826e-02  1.010489e-02
## 1-43894      -1.088652e-02 -1.544352e-02
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## 1-44137      1.881095e-02  -1.733443e-02
## 1-44178      -3.164440e-02 -1.838829e-02
## 1-44179      -1.087418e-02 -1.586801e-02
## 1-44214      3.139864e-02  1.095015e-02
## 1-44354      4.735389e-04  -3.666667e-03
## 1-44370      -4.431511e-02 -1.480537e-02
## 1-44386      -1.655944e-02  2.072211e-02
## 1-44407      -1.240212e-03 -1.868588e-03
## 1-44438      8.000150e-03  1.616891e-02
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## 1-44491      7.347088e-02  -2.890357e-02
## 1-44541      6.090107e-02  -5.229237e-02
## 1-44751      -6.309586e-03  5.434442e-03
## 1-44789      -1.992761e-02  2.450896e-02
## 1-44816      -6.945506e-03  1.478509e-02
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## 1-45136      -5.067303e-03  -1.731956e-02
## 1-45197      9.710444e-04  -1.105429e-02
## 1-45237      7.041094e-03  -1.857846e-03
## 1-45271      -9.565188e-04  -5.086360e-03
## 1-45311      1.305114e-02  -1.127853e-03
## 1-45367      -3.045665e-02  -2.787065e-02

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## 1-45419      -2.161521e-02 -1.955554e-02
## 1-45433      -2.116543e-02  1.816633e-03
## 1-45469      -7.322779e-03  4.304059e-04
## 1-45503      -2.246995e-03 -2.180277e-03
## 1-45555      3.531959e-02 -1.526830e-02
## 1-45606      5.408116e-03  6.680418e-03
## 1-45608      -1.426703e-02  5.791676e-03
## 1-45613      4.419898e-02 -4.362587e-02
## 1-45618      8.156184e-03 -6.836579e-03
## 1-45683      2.422113e-02 -3.078768e-03
## 1-45704      4.419898e-02 -4.362587e-02
## 1-45722      4.352498e-03  1.491775e-02
## 1-45786      -6.843862e-03  4.932228e-02
## 1-45788      1.830800e-03 -1.228289e-03
## 1-45831      -6.843862e-03  4.932228e-02
## 1-45883      -2.389367e-02 -1.918151e-02
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## 1-46003      3.034050e-03 -5.762704e-03
## 1-46027      -9.601674e-03 -1.435020e-02
## 1-46033      2.063502e-02  9.233540e-03
## 1-46049      -2.156021e-03  5.628668e-03
## 1-46120      1.379043e-02  4.627762e-02
## 1-46248      1.181554e-02 -7.129082e-03
## 1-46257      -4.943610e-03 -2.848476e-04
## 1-46260      -5.849579e-04 -1.260583e-02
## 1-46303      5.285700e-03 -2.304732e-02
## 1-46305      -9.492710e-04 -1.368123e-02
## 1-46346      2.979293e-05 -2.457337e-03
## 1-46367      -3.320909e-02 -1.310403e-02
## 1-46386      -1.656890e-02 -5.432369e-03
## 1-46387      2.204896e-04 -2.066498e-02
## 1-46392      4.114875e-02 -4.059814e-02
## 1-46410      2.557132e-02 -3.946489e-02
## 1-46429      9.103325e-04 -4.250141e-03
## 1-46499      3.482055e-02 -1.123576e-02
## 1-46501      2.168641e-04 -1.917877e-02
## 1-46523      -3.076543e-03 -9.969994e-03
## 1-46537      -2.330851e-02 -5.018062e-03
## 1-46559      -9.316600e-03 -3.978784e-02
## 1-46612      -6.026250e-03 -1.352693e-02
## 1-46615      -3.949424e-02 -1.956705e-02
## 1-46647      -1.458277e-02  1.818031e-02
## 1-46719      -6.368903e-04 -9.930997e-03
## 1-46737      1.191064e-03  6.917472e-03
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## 1-46818      1.330482e-02 -9.373644e-03
## 1-46828      -1.610345e-02  3.138463e-02
## 1-46832      -4.655752e-03  2.120929e-03
## 1-46842      1.140203e-02  3.199019e-03
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## 1-46919      8.019853e-02  3.529200e-03
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## 1-46951      -2.201908e-02 -7.771478e-03

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## 1-46982      9.464233e-03  7.756409e-03
## 1-46995      1.194323e-02  3.300972e-03
## 1-47013     -9.942984e-03 -3.714571e-02
## 1-47034      3.957510e-03  -4.151988e-03
## 1-47054      4.333468e-02  -1.455282e-02
## 1-47073     -2.096953e-02  1.765555e-02
## 1-47085     -2.266976e-02  2.236307e-02
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## 1-47115     -3.753363e-02 -1.703216e-02
## 1-47125     -1.219562e-02  7.073534e-03
## 1-47137     -6.164493e-03  3.688082e-02
## 1-47150     -1.012968e-02 -3.858987e-02
## 1-47175     -6.535493e-03 -1.381514e-02
## 1-47211      1.140203e-02  3.199019e-03
## 1-47238      1.362789e-03  -4.900883e-03
## 1-47272     -5.883276e-03  5.710437e-04
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## 1-47541      2.057120e-02 -1.176218e-02
## 1-47696     -2.009647e-02 -1.057476e-02
## 1-47718     -1.750910e-02 -1.501912e-02
## 1-47815     -3.091600e-02 -2.276953e-02
## 1-47854     -1.472215e-02  6.786138e-03
## 1-47908      8.808385e-03  2.239029e-02
## 1-47927     -4.217216e-02 -3.226414e-02
## 1-47986     -2.677474e-02  4.929405e-04
## 1-48011     -2.072518e-02 -1.191398e-02
## 1-48038     -2.072518e-02 -1.191398e-02
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## 1-48118      1.236723e-02  2.157969e-03
## 1-48221     -1.476226e-02 -1.670170e-02
## 1-48236     -3.348211e-03 -1.558776e-02
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## 1-48398     -1.048097e-02 -3.278860e-02
## 1-48404      1.578954e-04 -4.570301e-03
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## 1-48478      1.588765e-02  3.958644e-02
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## 1-48481     -5.740457e-03 -1.461430e-02
## 1-48527      5.182694e-03  9.731430e-03
## 1-48548      2.597521e-02  1.191344e-02
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## 1-48618      4.854015e-03 -6.519118e-03
## 1-48677     -2.890798e-02 -1.264195e-02
## 1-48714      4.125071e-02 -1.441520e-02
## 1-48735     -5.765905e-02 -3.962324e-02
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## 1-48979      -3.423561e-02  -7.360942e-03
## 1-48992      -1.715255e-04  -9.103972e-03
## 1-48998      -6.613608e-04  -2.431838e-03
## 1-49072      -8.873381e-02  -4.232206e-02
## 1-49143      2.927106e-03  1.025648e-02
## 1-49193      1.992774e-02  4.811288e-03
## 1-49289      -3.227686e-02  -1.093470e-01
## 1-49293      1.599448e-02  2.663989e-03
## 1-49305      1.500119e-02  3.495961e-02
## 1-49309      -1.525958e-02  -1.732090e-02
## 1-49336      -9.259837e-03  1.273983e-02
## 1-49377      3.004445e-02  -9.007447e-03
## 1-49383      -9.130699e-02  -5.525424e-02
## 1-49467      1.120876e-03  -2.277546e-02
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## 1-49531      1.364595e-02  3.221620e-02
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## 1-49602      -2.755031e-03  -1.462548e-02
## 1-49614      3.276415e-02  -4.197194e-03
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## 1-49784      -2.009226e-02  -1.436377e-02
## 1-49835      9.800423e-03  9.751483e-03
## 1-49939      -2.377410e-02  -1.280673e-02
## 1-49960      4.602536e-04  -2.844566e-03
## 1-49992      1.335370e-02  -1.928248e-03
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## 2-50082      2.602900e-02  -1.665299e-02
## 2-50133      -6.900062e-03  2.521682e-02
## 2-50222      2.775480e-02  -1.349377e-02
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## 2-50255      -1.698452e-02  -1.189874e-02
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## 2-50500      1.299766e-02  3.046472e-02
## 2-50505      1.210601e-02  -2.053663e-03
## 2-50608      -5.111343e-04  2.937475e-03
## 2-50613      -4.851320e-03  5.699647e-03
## 2-50637      1.319243e-03  -5.684422e-03
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## 2-50792      -2.779347e-02  -2.443021e-02
## 2-50801      4.228514e-02  4.252662e-02
## 2-50940      1.299923e-02  3.612840e-02
## 2-50949      -3.308715e-02  -4.075799e-02
## 2-51014      1.586755e-02  6.361678e-03
## 2-51037      4.604110e-02  -1.605380e-02
## 2-51085      -9.338720e-03  -2.954301e-02
## 2-51215      2.843292e-03  -2.128126e-02
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## 2-51305      -2.673140e-02  -3.435378e-02

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## 2-51398     -6.031613e-02 -1.061642e-02
## 2-51444      8.074518e-02 -9.916084e-06
## 2-51471      3.648248e-02  1.308599e-01
## 2-51479      7.614034e-03  3.723196e-04
## 2-51522      1.051816e-02  2.353165e-03
## 2-51611     -3.398557e-02  1.541255e-02
## 2-51622      4.893728e-02  1.277039e-01
## 2-51645      1.474199e-02  2.655781e-02
## 2-51671      1.334908e-02  1.159889e-02
## 2-51678      3.559743e-02  -5.064768e-02
## 2-51739     -9.031381e-03  3.760430e-03
## 2-51773      1.326389e-02  1.183024e-02
## 2-51781     -1.107406e-02  -1.002059e-02
## 2-51990     -8.499792e-03  -2.590336e-02
## 2-52062     -1.274611e-02  4.750777e-03
## 2-52069     -1.982034e-02  -8.887868e-03
## 2-52070      2.528684e-02  3.174956e-02
## 2-52074     -1.559125e-02  3.796001e-02
## 2-52148     -1.274611e-02  4.750777e-03
## 2-52173     -4.182518e-03  -7.560805e-03
## 2-52190     -2.638304e-02  -8.736550e-03
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## 2-52316      2.127930e-02  8.095385e-03
## 2-52380      1.153720e-02  2.037380e-02
## 2-52408      5.700798e-03  -5.867624e-03
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## 2-52481     -3.612554e-02  -3.635687e-02
## 2-52502     -4.493492e-03  -8.849058e-05
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## 2-52752      2.217528e-02  2.334925e-03
## 2-52764     -9.105262e-03  4.003965e-03
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## 2-53001      1.417808e-02  8.007430e-03
## 2-53048     -3.545606e-02  -1.062352e-02
## 2-53118     -3.189686e-02  -2.394386e-02
## 2-53142      2.687398e-03  -4.798182e-03
## 2-53153     -1.449766e-03  -2.312268e-02
## 2-53154     -1.449766e-03  -2.312268e-02
## 2-53203      3.863562e-02  9.822258e-03
## 2-53210      1.479596e-03  -6.837039e-03
## 2-53228      9.916662e-03  -9.476179e-04
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## 2-53306      2.041021e-03  -4.832847e-03

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## 2-53328      6.031899e-03  3.600572e-04
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## 2-53482      1.067740e-02  -2.616637e-03
## 2-53518      5.792584e-02  -7.359667e-02
## 2-53527      7.480927e-03  4.612758e-02
## 2-53528      1.584353e-03  2.514339e-02
## 2-53560     -7.659240e-03  5.856502e-02
## 2-53745     -9.366547e-03  -4.054575e-02
## 2-53779     -2.884151e-03  -8.891307e-03
## 2-53785     -1.637285e-02   1.008411e-02
## 2-53851     -2.948384e-02  -5.256404e-03
## 2-53869      8.422703e-03  -2.344186e-03
## 2-53937      2.077616e-03  7.900330e-03
## 2-53967      1.025030e-02   7.080099e-03
## 2-54100      2.877896e-02   2.461003e-02
## 2-54135      1.752027e-02  -4.161057e-03
## 2-54198     -6.022727e-02  -4.596976e-02
## 2-54263      7.868509e-03  -2.515056e-03
## 2-54293      4.675565e-03  1.174057e-02
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## 2-54528     -2.942120e-02  -4.704857e-03
## 2-54547     -3.551945e-02  -5.536709e-03
## 2-54549     -7.789752e-03  -8.730116e-03
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## 2-54626     -2.405381e-02  -1.569883e-02
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## 2-55143      1.873917e-03  -2.767253e-03
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## 2-55230     -7.227919e-03  1.653363e-03
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## 2-55303      1.186969e-02  -1.111117e-03
## 2-55392      6.535384e-03  7.634987e-03
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## 2-56190      -2.367030e-02 -2.354282e-02
## 2-56227      4.846987e-02 -3.862883e-02
## 2-56247      1.403263e-02  1.700992e-02
## 2-56253      2.781796e-03  1.155437e-02
## 2-56256      1.220130e-03 -6.177972e-03
## 2-56407      -2.887691e-03 -1.169352e-02
## 2-56551      6.643501e-02 -1.462909e-03
## 2-56616      9.173956e-03  2.389977e-02
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## 2-56669      -2.487837e-02 -1.527315e-02
## 2-56684      8.612421e-04 -1.498872e-02
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## 2-56752      9.564653e-02 -3.534688e-02
## 2-56774      1.525029e-02  7.201357e-03
## 2-56825      -2.092589e-02 -2.722044e-02
## 2-56865      -4.446004e-03  1.282685e-03
## 2-56911      -1.866318e-02 -8.095952e-03
## 2-56937      -3.440533e-02  2.163997e-02
## 2-56940      -1.536419e-02 -2.152271e-02
## 2-56942      8.739248e-03  3.148253e-02
## 2-56959      1.182937e-02  1.789645e-02
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## 2-57523      1.442553e-03 -6.566875e-03
## 2-57553      -5.057891e-03 -3.228366e-02
## 2-57560      -9.211630e-03  1.800573e-02
## 2-57560_2     8.056171e-03  2.315746e-02
## 2-57611      5.015828e-03  6.079598e-03
## 2-57624      1.448784e-03 -7.762205e-04
## 2-57659      1.598772e-03 -2.430897e-02
## 2-57774      2.264028e-02 -4.735937e-03
## 2-57830      -3.585187e-02 -6.542204e-03

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## 2-57997      2.306266e-02  1.329998e-02
## 2-58109      1.468546e-02  -2.395478e-03
## 2-58376      1.862930e-02  -7.997250e-03
## 2-58427      2.492400e-02  9.824422e-03
## 2-58429      1.005863e-02  1.106053e-02
## 2-58457      4.465657e-02  -3.667145e-02
## 2-58466      1.075609e-02  3.930767e-03
## 2-58481      -4.580143e-03 -1.635185e-02
## 2-58566      7.384967e-03  1.778222e-03
## 2-58586      -4.586919e-02 -1.636671e-02
## 2-58598      -2.428817e-03  1.952255e-02
## 2-58629      -4.246570e-02  -2.851129e-02
## 2-58652      8.744702e-03  4.141533e-03
## 2-58696      9.590730e-03  3.047844e-03
## 2-58828      7.808492e-03  -2.063800e-03
## 2-58867      2.031235e-03  -6.055244e-03
## 2-58920      -1.297199e-01  4.253602e-02
## 2-58929      1.046219e-02  2.987060e-03
## 2-58931      -2.452377e-03  -2.035709e-04
## 2-58939      -7.094442e-03  9.317865e-03
## 2-58953      -5.362833e-04  -1.977183e-02
## 2-58978      8.473586e-03  -1.806232e-03
## 2-58999      -2.452377e-03  -2.035709e-04
## 2-59000      8.024510e-03  2.999161e-03
## 2-59004      4.764295e-03  -4.080822e-03
## 2-59039      8.024510e-03  2.999161e-03
## 2-59040      -1.627773e-02  1.172547e-02
## 2-59171      9.548834e-03  3.649546e-03
## 2-59190      6.906060e-02  -3.505724e-02
## 2-59274      -2.979719e-02  3.338973e-02
## 2-59275      -4.433531e-03  2.203873e-02
## 2-59308      -5.778677e-03  -4.884664e-02
## 2-59323      -2.057215e-02  -2.028477e-02
## 2-59389      2.036842e-02  4.565596e-02
## 2-59394      7.187542e-03  1.920201e-02
## 2-59399      -2.190228e-02  -3.657782e-02
## 2-59425      9.632133e-03  3.940634e-03
## 2-59488      -1.591478e-02  3.286806e-02
## 2-59547      -2.079208e-02  -3.120541e-03
## 2-59550      -4.720345e-03  5.175634e-02
## 2-59552      3.341341e-02  -2.181011e-02
## 2-59581      7.787327e-03  -1.816474e-03
## 2-59629      -2.190228e-02  -3.657782e-02
## 2-59701      1.363515e-02  4.540873e-03
## 2-59722      -3.054537e-02  3.279734e-02
## 2-59805      4.640219e-02  -1.781421e-02
## 2-59863      -1.533953e-02  3.167813e-02
## 2-59864      3.206638e-02  1.574439e-02
## 2-59867      -2.515395e-04  3.345174e-03
## 2-59871      1.832110e-03  -6.842355e-03
## 2-59871_2    -2.775225e-03  -2.451194e-02
## 2-59896      -2.297370e-02  -2.167932e-02
## 2-59912      1.585348e-02  1.565722e-03
## 2-59913      1.338186e-02  4.872510e-03

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## 2-59999      5.274660e-02  6.508455e-03
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## 2-60176      1.738643e-01  6.987278e-02
## 2-60201      -3.096370e-02  1.560853e-02
## 2-60210      -2.108309e-02  2.394782e-02
## 2-60242      5.140147e-02  -4.411373e-02
## 2-60284      2.126841e-02  2.745921e-03
## 2-60360      8.307228e-03  -1.057362e-02
## 2-60449      -3.042760e-02  -1.295321e-04
## 2-60554      8.304242e-02  -4.333426e-04
## 2-60628      2.496555e-02  1.124322e-02
## 2-60746      -8.353158e-05  -1.761411e-03
## 2-60783      -6.524022e-03  1.894182e-03
## 2-60797      -1.598098e-03  -1.282815e-02
## 2-60810      1.184904e-02  1.027851e-02
## 2-60817      -4.957966e-02  -2.717878e-02
## 2-60886      1.401670e-03  6.907518e-03
## 2-61028      -2.660775e-02  -4.468488e-02
## 2-61052      1.407499e-02  -4.450459e-04
## 2-61067      9.544375e-04  -6.610892e-03
## 2-61130      1.903499e-02  3.840218e-03
## 2-61143      2.047109e-02  1.024440e-02
## 2-61241      8.304242e-02  -4.333426e-04
## 2-61287      1.236261e-02  2.778112e-02
## 2-61333      -2.509337e-02  3.545430e-02
## 2-61343      -3.351751e-02  -6.131283e-03
## 2-61391      -7.773280e-02  5.961650e-02
## 2-61395      -6.896572e-03  1.940008e-03
## 2-61416      -1.989306e-02  -1.190535e-03
## 2-61495      1.215784e-02  -7.294787e-03
## 2-61578      -1.421937e-02  -6.896145e-03
## 2-61606      -2.480620e-03  7.098474e-03
## 2-61680      1.257471e-02  7.677782e-03
## 2-61769      2.688350e-03  -5.713829e-03
## 2-61867      -1.834627e-04  5.119319e-03
## 2-61915      7.738869e-03  -2.254928e-03
## 2-61965      4.774189e-02  -3.968022e-02
## 2-61968      3.861598e-02  -6.433322e-03
## 2-61984      2.021073e-02  5.652447e-03
## 2-62039      -1.834627e-04  5.119319e-03
## 2-62065      -1.584484e-02  -9.283265e-03
## 2-62066      -4.569585e-03  -1.354256e-02
## 2-62070      1.591850e-02  3.551628e-03
## 2-62084      6.059905e-03  -1.302090e-03
## 2-62104      8.304242e-02  -4.333426e-04
## 2-62159      2.070625e-02  9.697781e-03
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## 2-62276      2.731920e-02  7.330400e-03
## 2-62292      -2.316585e-02  -3.773028e-02
## 2-62293      1.326689e-02  4.394527e-02
## 2-62302      5.955670e-03  -1.226898e-03
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## 2-62549 -2.495300e-02 -3.963348e-02
## 2-62638 7.174192e-02 4.867113e-02
## 2-62660 -3.626342e-02 -3.089530e-02
## 2-62673 -4.662542e-03 -1.235836e-03
## 2-62698 -1.165725e-02 3.900236e-02
## 2-62722 3.855353e-02 8.957557e-03
## 2-62726 -2.000842e-02 -8.921140e-03
## 2-62727 -4.662542e-03 -1.235836e-03
## 2-62772 -1.496370e-03 -2.269392e-02
## 2-62831 1.449709e-03 -5.303424e-03
## 2-62839 1.613468e-02 2.986980e-02
## 2-62908 -5.954158e-03 -1.348072e-02
## 2-62916 3.183589e-02 2.789685e-03
## 2-62965 1.449709e-03 -5.303424e-03
## 2-62983 1.703842e-02 3.568618e-02
## 2-63008 -1.707984e-02 -1.028617e-03
## 2-63025 6.726757e-02 -6.969403e-04
## 2-63072 -4.946401e-02 -5.386979e-03
## 2-63082 1.464229e-02 7.713784e-03
## 2-63115 1.443536e-02 7.988260e-03
## 2-63157 -2.144831e-02 -9.251151e-03
## 2-63196 1.375098e-03 -7.209454e-03
## 2-63237 3.672134e-03 1.475910e-03
## 2-63263 1.042763e-02 2.866596e-02
## 2-63289 5.980488e-03 1.290886e-02
## 2-63311 -3.558752e-03 4.523249e-03
## 2-63377 1.121480e-02 3.009345e-03
## 2-63379 -1.102115e-02 6.280153e-02
## 2-63403 1.705434e-02 -9.296277e-03
## 2-63411 1.531657e-02 8.208919e-03
## 2-63413 -3.435568e-02 -2.766742e-02
## 2-63414 -2.695244e-03 -1.607887e-02
## 2-63416 2.430389e-03 -1.457308e-02
## 2-63462 -2.422190e-02 -9.752947e-03
## 2-63476 -8.023263e-03 1.363453e-02
## 2-63534 -1.085928e-02 1.586664e-02
## 2-63606 -1.707984e-02 -1.028617e-03
## 2-63668 2.365409e-02 5.315608e-03
## 2-63672 2.600771e-02 -7.855534e-03
## 2-63735 -1.590155e-02 -1.010208e-03
## 2-63836 -1.096109e-03 2.156196e-02
## 2-63915 6.134881e-03 1.750510e-02
## 2-63943 -1.169553e-02 6.718893e-02
## 2-64002 5.988881e-04 -7.466993e-03
## 2-64033 9.102431e-03 2.059440e-02
## 2-64048 -1.108837e-02 6.280790e-02
## 2-64065 -2.931250e-02 -3.358791e-02
## 2-64093 1.948263e-03 7.360915e-03
## 2-64097 1.219976e-02 -4.731972e-02
## 2-64102 8.578587e-03 2.017100e-02
## 2-64113 2.922095e-02 8.391442e-03
## 2-64136 -9.421624e-03 -2.341545e-03
## 2-64243 -2.625901e-03 1.122662e-03
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## 2-64474      -5.516210e-02 -1.372153e-02
## 2-64480      -1.865606e-02 -2.741685e-02
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## 2-64654      5.273067e-03  2.451933e-03
## 2-64659      1.623474e-02  4.195196e-03
## 2-64676      1.479596e-03  -6.837039e-03
## 2-64706      2.813853e-02  5.771764e-03
## 2-64712      -7.981634e-03 -3.072735e-02
## 2-64769      1.839452e-03  -5.873124e-03
## 2-64868      4.774189e-02  -3.968022e-02
## 2-64996      4.058744e-03  -3.265639e-02
## 2-65038      1.288323e-02  5.616929e-03
## 2-65165      2.093901e-04  -3.052182e-02
## 2-65196      1.631504e-02  2.581404e-03
## 2-65389      -1.691542e-02 -1.562679e-02
## 2-65419      -1.775973e-02 -8.670026e-02
## 2-65554      6.083186e-02  -5.698089e-02
## 2-65595      -7.520822e-03  1.791172e-03
## 2-65655      -8.489623e-03  2.708144e-02
## 2-65669      -4.052484e-02 -1.177893e-02
## 2-65759      2.005372e-02  5.438274e-03
## 2-65820      1.313462e-02  1.027826e-02
## 2-65822      7.675101e-04  5.275630e-03
## 2-65830      -4.217093e-04 -6.099718e-03
## 2-65843      -3.123627e-02  7.398621e-03
## 2-65851      -1.209833e-02  5.456059e-02
## 2-65891      -3.541791e-02 -5.721829e-02
## 2-65903      3.580798e-03  1.274173e-03
## 2-65924      2.114462e-02  6.010406e-03
## 2-65941      8.627430e-03  8.518379e-03
## 2-66043      -4.217093e-04 -6.099718e-03
## 2-66051      2.320682e-02  4.857244e-02
## 2-66080      5.061929e-03  1.633232e-02
## 2-66220      -1.087914e-01 -1.678523e-02
## 2-66240      -1.042074e-03  6.951608e-03
## 2-66365      1.331759e-02 -6.529100e-03
## 2-66382      4.277915e-03  1.465967e-04
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## 2-66605      1.213861e-02  4.858866e-03
## 2-66610      -6.774721e-03 -1.409718e-02
## 2-66656      2.226436e-03 -3.657523e-03
## 2-66669      -4.217093e-04 -6.099718e-03
## 2-66675      -1.034738e-02  6.276910e-02
## 2-66693      1.583083e-02  9.201434e-03
## 2-66816      -1.117255e-04 -2.623845e-02
## 2-66870      -6.774721e-03 -1.409718e-02
## 2-66914      -2.711746e-02 -1.963971e-02
## 2-66919      -1.082925e-02  5.628892e-02
## 2-66979      1.379369e-02 -5.271396e-03
## 2-67048      -2.019651e-02  9.682844e-03
## 2-67078      5.266887e-03 -3.271538e-02
## 2-67143      4.774189e-02 -3.968022e-02
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## 2-67367      -1.884942e-02  -1.557517e-02
## 2-67399      9.600147e-03   3.022430e-03
## 2-67431      -9.972829e-03  5.384976e-02
## 2-67460      7.915173e-03   2.319344e-02
## 2-67496      1.094308e-02   2.888159e-02
## 2-67500      4.905113e-03   -4.502967e-02
## 2-67544      -8.037916e-03  -1.713328e-02
## 2-67602      1.251040e-02   1.924826e-03
## 2-67607      6.654082e-03   -2.781226e-02
## 2-67627      -6.535772e-04  -6.519410e-03
## 2-67630      1.267850e-02   3.288176e-02
## 2-67661      -1.866242e-03  8.245759e-03
## 2-67662      1.221854e-02   3.142736e-02
## 2-67665      -4.018104e-02  2.387397e-03
## 2-67667      6.966899e-02   -4.762838e-02
## 2-67795      -8.037916e-03  -1.713328e-02
## 2-67821      1.863720e-03   -4.410032e-03
## 2-67824      -3.674770e-02  1.452878e-02
## 2-67857      1.247523e-02   -4.710380e-02
## 2-67956      1.191162e-02   1.596612e-02
## 2-67971      1.969425e-02   1.120331e-02
## 2-68004      -2.711383e-02  -2.366099e-02
## 2-68034      1.255354e-02   2.815777e-02
## 2-68062      -8.037916e-03  -1.713328e-02
## 2-68076      -1.376808e-02  1.820310e-02
## 2-68089      4.514361e-02   8.996614e-03
## 2-68099      1.086534e-02   -1.287506e-02
## 2-68109      6.966899e-02   -4.762838e-02
## 2-68136      -8.525563e-03  -3.611263e-03
## 2-68143      4.918124e-03   1.214420e-02
## 2-68180      1.957439e-03   -4.601196e-03
## 2-68181      4.604110e-02   -1.605380e-02
## 2-68266      1.378408e-02   1.278998e-02
## 2-68271      1.957439e-03   -4.601196e-03
## 2-68276      1.362764e-02   1.533629e-03
## 2-68303      -2.905750e-03  1.940993e-03
## 2-68312      -1.109948e-02  6.845833e-02
## 2-68317      1.132005e-02   2.714307e-03
## 2-68348      1.353590e-02   -1.118928e-02
## 2-68375      4.367204e-03   -7.225907e-03
## 2-68389      3.430035e-02   -6.712915e-03
## 2-68413      1.957439e-03   -4.601196e-03
## 2-68431      -8.037916e-03  -1.713328e-02
## 2-68453      2.879351e-03   5.958862e-03
## 2-68566      -4.063453e-02  -7.151367e-03
## 2-68686      -8.099992e-04  -1.003673e-02
## 2-68711      1.909345e-03   -3.726185e-03
## 2-68727      1.957439e-03   -4.601196e-03
## 2-68830      -3.795379e-02  1.654811e-03
## 2-68873      1.957439e-03   -4.601196e-03
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## 2-68939      1.020983e-02 -1.209183e-02
## 2-68977      -1.017227e-02 -3.693819e-02
## 2-68978      -1.216670e-02  5.002056e-02
## 2-69003      1.019102e-02  2.739349e-02
## 2-69049      -8.185390e-03 -3.472480e-02
## 2-69077      -2.343326e-03 -6.394451e-02
## 2-69083      4.282470e-03 -6.383423e-03
## 2-69084      1.550436e-02  2.809351e-03
## 2-69089      -4.548181e-02  1.639245e-02
## 2-69128      5.291270e-03  2.040779e-02
## 2-69157      2.287588e-02 -1.065099e-02
## 2-69238      -8.037916e-03 -1.713328e-02
## 2-69256      -5.213036e-02 -8.841529e-03
## 2-69270      -5.523430e-03 -4.751629e-02
## 2-69278      -8.037916e-03 -1.713328e-02
## 2-69318      1.957439e-03 -4.601196e-03
## 2-69388      -3.302228e-02 -8.124456e-05
## 2-69419      -5.784296e-03 -5.793076e-03
## 2-69464      1.233488e-02 -1.998635e-03
## 2-69597      1.957439e-03 -4.601196e-03
## 2-69605      3.395431e-02  4.311699e-03
## 2-69679      -1.816325e-02 -1.043819e-02
## 2-69744      -6.460637e-02 -9.468231e-03
## 2-69762      -6.706589e-03 -1.935506e-02
## 2-69795      7.212580e-03  1.832716e-02
## 2-69943      -1.596286e-03 -2.410554e-02
## 2-70000      3.451682e-03  4.451716e-03
## 2-70007      -2.235404e-02  1.002092e-02
## 2-70056      6.573571e-03  6.359038e-03
## 2-70057      1.377776e-02  7.311007e-03
## 2-70065      1.479596e-03 -6.837039e-03
## 2-70173      -8.860218e-03 -2.019934e-02
## 2-70177      7.667833e-03  2.372816e-02
## 2-70191      9.157232e-03  2.619759e-02
## 2-70194      4.417541e-02 -2.505234e-03
## 2-70199      2.552117e-02 -1.075054e-02
## 2-70284      -1.597678e-02  3.329528e-03
## 2-70328      1.652330e-03 -1.578070e-03
## 2-70387      -3.543188e-02 -5.017670e-02
## 2-70394      -4.242616e-02  9.454784e-03
## 2-70446      3.284961e-02  7.917999e-03
## 2-70476      -3.901422e-02 -6.107977e-02
## 2-70487      -3.990466e-02  3.006391e-02
## 2-70508      2.487665e-02  1.293915e-02
## 2-70516      3.978593e-02  6.917809e-03
## 2-70541      -1.587950e-03 -9.867469e-03
## 2-70578      -3.811238e-03 -2.353014e-02
## 2-70697      1.957439e-03 -4.601196e-03
## 2-70742      -4.095192e-02  3.096819e-02
## 2-70751      -1.718476e-02  4.181713e-02
## 2-70790      -3.473301e-03 -3.631098e-03
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## 2-71241      -1.812418e-02  3.929022e-03
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## 2-71287      2.283733e-02  2.762544e-02
## 2-71368      -7.375629e-03  5.516221e-02
## 2-71439      -1.231351e-02  2.911713e-02
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## 2-71510      1.376838e-02  3.261170e-03
## 2-71514      -1.605171e-03  1.799261e-03
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## 2-72755      -5.530258e-03  5.237527e-02
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## 2-72997      8.962702e-03  -2.807612e-03

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| ## 2-73289 | -7.918826e-02 | -8.392663e-02 |
| ## 2-73373 | -3.271316e-04 | 4.022479e-03 |
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| ## 2-73748 | -5.448939e-03 | 8.848831e-03 |
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| ## 2-73827 | 2.365834e-02 | 1.370731e-02 |
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| ## 2-73913 | 3.171860e-02 | -5.404514e-03 |
| ## 2-73951 | -9.085705e-04 | -9.898527e-03 |
| ## 2-74021 | -8.672567e-03 | -2.743176e-02 |
| ## 2-74072 | -1.570750e-02 | -3.114720e-02 |
| ## 2-74112 | -1.167276e-03 | -2.505209e-02 |
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| ## 2-74188 | -7.777950e-03 | -2.477749e-02 |
| ## 2-74214 | -1.151457e-02 | 1.498765e-02 |
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## 2-75044      -3.242422e-02 -6.882168e-03
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## 2-75977      3.173176e-03 -4.149016e-03
## 2-76011      1.977885e-02  4.364579e-03
## 2-76017      2.408040e-03  1.179973e-02
## 2-76043      -6.311211e-03  5.620807e-02
## 2-76216      4.091759e-02 -5.378740e-02
## 2-76237      -2.725789e-02 -8.963805e-03
## 2-76313      -1.307048e-03 -6.788893e-03
## 2-76465      -8.758527e-03 -3.960473e-02
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## 2-77066      -4.764777e-03 -1.341217e-02
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## 2-77120      6.818878e-04  2.948963e-03
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## 2-77231      2.387584e-03  7.501835e-03
## 2-77251      -2.936420e-02 -2.918446e-03
## 2-77269      4.389600e-03 -1.227793e-02
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## 2-77535      3.635946e-02 -2.214635e-02
## 2-77567      -2.742142e-02  1.905188e-04
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## 2-78660      3.377885e-02 -4.939961e-02
## 2-78677      -3.200810e-02  4.874416e-04
## 2-78685      7.612791e-04  2.108018e-02
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## 2-78857      2.279602e-03 -1.511200e-02
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## 2-78943_2    -1.752832e-02 -1.466005e-02
## 2-78969      -2.737692e-02 -2.992392e-02
## 2-78975      1.259086e-02  2.900946e-02
## 2-79009      -3.260851e-02  8.722125e-05
## 2-79015      1.179519e-03 -2.707870e-03
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## 2-79175      1.329564e-02 -2.934984e-03
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## 2-82399      3.932864e-03  3.174839e-04
## 2-82422      -3.648330e-03  4.068299e-03
## 2-82455      -3.607166e-03  -1.213732e-02
## 2-82455_2     2.617358e-03  1.407744e-02
## 2-82455_3     1.893110e-02  8.765459e-03
## 2-82482      1.194032e-02  5.148742e-03
## 2-82569      -3.156157e-02  2.405631e-03
## 2-82570      9.528512e-02  -4.261413e-02
## 2-82592      -3.318241e-02  -6.042627e-03
## 2-82598      -7.857479e-03  -1.678525e-02

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## 2-82640      8.531884e-03  1.629816e-03
## 2-82643     -7.977227e-03  3.433673e-02
## 2-82718     -1.758836e-02 -7.438577e-03
## 2-82804     -7.090410e-03  2.914515e-02
## 2-82872     -2.993608e-02  1.991493e-02
## 2-82902     -3.317596e-02 -1.046988e-02
## 2-82942     -4.917987e-03 -2.225525e-02
## 2-82989      1.082474e-02  1.741817e-02
## 2-82990     -6.398875e-03  1.233862e-02
## 2-83012      2.844367e-02  1.275518e-02
## 2-83023      6.372228e-02 -4.187302e-02
## 2-83033     -2.887502e-02 -5.027093e-03
## 2-83176     -5.076743e-02  7.246386e-03
## 2-83179      1.926950e-02 -5.514169e-03
## 2-83219     -1.870342e-02  4.642841e-02
## 2-83283     -5.187083e-02 -2.327843e-02
## 2-83314     -4.560871e-03 -1.185789e-02
## 2-83318      1.760064e-02  9.217972e-03
## 2-83333      7.118527e-03  1.924435e-02
## 2-83365      2.643772e-02 -3.444190e-02
## 2-83370      1.195100e-02  4.244524e-03
## 2-83461     -5.687276e-02  9.950395e-03
## 2-83470      6.181748e-03 -2.861591e-03
## 2-83495      5.562337e-04 -1.864426e-02
## 2-83572      1.749734e-02  6.715375e-03
## 2-83633      9.660434e-03  8.126748e-03
## 2-83712      4.112341e-02 -1.440982e-02
## 2-83725      7.595060e-03  1.186385e-02
## 2-83730      2.909316e-02  2.406925e-03
## 2-83788     -3.517710e-02  3.074673e-02
## 2-83843      9.660434e-03  8.126748e-03
## 2-83849     -7.942448e-03 -1.812743e-02
## 2-83871      9.419140e-02 -1.889610e-02
## 2-83921     -2.376652e-02 -1.932452e-02
## 2-83924     -2.127953e-02 -1.038090e-02
## 2-83940     -2.235193e-02 -1.833537e-02
## 2-83984      1.335939e-02 -1.304108e-03
## 2-84003      1.747287e-02  6.573289e-03
## 2-84051      9.641633e-04 -1.576774e-02
## 2-84058     -7.437712e-03 -1.175899e-03
## 2-84078     -9.104038e-03  1.765363e-03
## 2-84085      5.174040e-02 -2.627447e-02
## 2-84142     -8.621800e-03 -1.687922e-02
## 2-84184      3.642964e-03  5.775927e-02
## 2-84185     -5.149304e-03  2.165482e-02
## 2-84265     -5.194525e-03  1.182088e-02
## 2-84323     -1.980428e-02 -2.312841e-02
## 2-84345      4.781778e-03 -4.832203e-04
## 2-84415     -4.016467e-02 -7.580274e-03
## 2-84447      1.312217e-03 -3.116047e-03
## 2-84507      8.578467e-03  1.225318e-02
## 2-84527     -2.839336e-02 -2.973646e-03
## 2-84527_2    3.907278e-03  1.915685e-02
## 2-84542     -5.155455e-02 -1.278726e-02

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## 2-84562      2.273645e-02  9.712848e-03
## 2-84566      4.752278e-02 -4.569361e-02
## 2-84601      -1.765837e-02  3.024503e-02
## 2-84685      -1.002144e-02  1.851233e-03
## 2-84700      -2.222079e-02  6.782228e-02
## 2-84727      -5.078477e-03  1.207887e-02
## 2-84737      -1.136967e-02  4.547476e-02
## 2-84788      7.976838e-03 -1.106643e-04
## 2-84868      -6.826481e-03 -2.974940e-05
## 2-84931      -1.765837e-02  3.024503e-02
## 2-84989      2.618003e-02  1.146222e-02
## 2-85028      -1.114144e-02 -1.413411e-02
## 2-85036      -4.529185e-02 -7.504975e-03
## 2-85037      5.835365e-03  1.806598e-03
## 2-85138      -2.179579e-02 -8.253384e-03
## 2-85184      8.987479e-04  2.544384e-02
## 2-85222      1.554917e-03 -5.126055e-03
## 2-85278      -1.881630e-02 -7.390530e-02
## 2-85285      3.700140e-02  2.065976e-02
## 2-85301      -2.213637e-03 -9.024885e-03
## 2-85305      1.770372e-02  1.175420e-02
## 2-85332      2.754707e-03 -2.215752e-02
## 2-85405      1.505041e-03 -5.139980e-03
## 2-85406      -2.869012e-02 -1.372690e-02
## 2-85490      -2.038028e-02 -1.777936e-02
## 2-85492      2.013315e-02  3.986402e-02
## 2-85694      1.510353e-04 -2.231953e-03
## 2-85718      -3.942975e-02 -4.702799e-03
## 2-85732      8.849863e-02 -4.582885e-02
## 2-85826      -3.239536e-03 -3.650189e-03
## 2-85841      -2.038028e-02 -1.777936e-02
## 2-85882      4.721699e-02 -1.121523e-02
## 2-85896      1.510353e-04 -2.231953e-03
## 2-86003      -9.435072e-03 -3.476433e-02
## 2-86025      -1.468217e-02  1.982547e-02
## 2-86051      -1.152409e-03 -1.591521e-03
## 2-86089      -1.150551e-02  9.300908e-03
## 2-86099      -2.112846e-02 -1.837175e-02
## 2-86104      5.252196e-02 -2.624774e-02
## 2-86164      1.723246e-02  1.454474e-02
## 2-86219      1.980473e-02  3.921534e-02
## 2-86228      -1.132201e-04 -7.619456e-04
## 2-86236      3.791200e-03  1.440775e-02
## 2-86246      7.613765e-03 -1.075004e-02
## 2-86412      2.506558e-02 -7.567159e-03
## 2-86429      -2.703905e-04 -3.165747e-03
## 2-86439      -2.112846e-02 -1.837175e-02
## 2-86544      -6.851925e-03 -1.676741e-02
## 2-86545      -2.112846e-02 -1.837175e-02
## 2-86582      -1.717120e-03  1.165346e-02
## 2-86605      1.645009e-02  7.508212e-03
## 2-86622      -4.055200e-02 -1.054091e-02
## 2-86762      1.413017e-02  2.139325e-03
## 2-86797      4.014851e-03 -8.548431e-03

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## 2-86880      -2.330517e-02  3.556340e-02
## 2-86897      -1.639174e-02  -7.485206e-03
## 2-86956      -1.079126e-02  -7.958449e-02
## 2-86994      -1.436036e-04   7.191415e-03
## 2-87112      1.757264e-02   3.593121e-02
## 2-87119      -4.513575e-03   6.485395e-03
## 2-87143      -3.124609e-02   -6.882056e-02
## 2-87159      -1.765136e-03   -6.337937e-03
## 2-87162      -6.185523e-03   -2.226255e-04
## 2-87215      1.822860e-03   -1.342009e-02
## 2-87237      5.653415e-03   -7.195519e-03
## 2-87247      6.981103e-02   -6.021299e-02
## 2-87331      3.732652e-04   -8.118071e-03
## 2-87365      1.895125e-02   -5.389430e-03
## 2-87369      7.636266e-03   -3.901406e-03
## 2-87382      -1.455777e-02   -2.703100e-02
## 2-87389      -1.018916e-03   7.956961e-03
## 2-87413      -3.286875e-02   -3.756432e-02
## 2-87535      -8.747007e-03   -1.269609e-05
## 2-87540      2.070949e-02   -3.460599e-03
## 2-87615      1.397151e-02   6.449219e-03
## 2-87647      1.365786e-02   1.700364e-04
## 2-87694      -1.309712e-02   2.272415e-02
## 2-87699      5.073496e-02   -4.696166e-02
## 2-87783      2.189729e-02   8.953310e-03
## 2-87827      -4.659501e-02   5.119326e-04
## 2-87889      -1.607552e-02   5.715431e-02
## 2-87909      5.221686e-04   1.682341e-02
## 2-87928      -3.643481e-02   -4.130068e-02
## 2-87970      -3.492070e-02   1.970260e-02
## 2-88054      1.741487e-02   1.042768e-02
## 2-88095      3.145308e-03   2.375120e-02
## 2-88103      8.033847e-03   -7.960361e-03
## 2-88222      -1.183949e-02   2.222631e-02
## 2-88255      1.863082e-02   -1.600608e-02
## 2-88274      -6.717054e-03   7.423127e-04
## 2-88354      4.108855e-03   -6.757728e-03
## 2-88414      2.939561e-02   6.495139e-02
## 2-88427      1.198675e-03   -5.551696e-03
## 2-88438      -1.431806e-02   -6.193651e-02
## 2-88498      -3.413031e-03   9.115254e-03
## 2-88563      -7.310852e-03   -1.783476e-02
## 2-88584      -1.182477e-02   6.833479e-03
## 2-88628      -7.310852e-03   -1.783476e-02
## 2-88643      -1.170630e-02   2.029149e-02
## 2-88683      6.686293e-02   -1.184536e-03
## 2-88698      2.939561e-02   6.495139e-02
## 2-88698_2    -1.929839e-02   6.766801e-04
## 2-88716      -8.552595e-03   1.309932e-02
## 2-88747      5.066868e-02   -5.420353e-02
## 2-88827      1.345651e-02   -4.734869e-03
## 2-88838      -7.310852e-03   -1.783476e-02
## 2-88876      3.342053e-02   -3.087105e-03
## 2-88879      -5.304000e-03   -1.131770e-02

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## 2-88905      -1.812847e-02 -1.522058e-02
## 2-88963      3.048475e-04 -3.306935e-03
## 2-89049      1.249381e-03 -4.109658e-03
## 2-89120      -7.105492e-03 -4.185805e-03
## 2-89135      2.438058e-02  5.298875e-02
## 2-89137      -1.614386e-02  7.282637e-03
## 2-89145      1.368473e-02  1.052363e-02
## 2-89261      -3.201399e-03  4.002309e-02
## 2-89276      -1.088568e-02 -5.901106e-03
## 2-89348      -2.786102e-02  5.489304e-03
## 2-89357      2.613298e-02  2.141382e-02
## 2-89390      -8.555994e-03 -4.128402e-03
## 2-89401      -2.733620e-02 -3.216235e-02
## 2-89416      1.111536e-02 -7.474952e-05
## 2-89508      7.888880e-02 -9.096114e-03
## 2-89512      -4.323640e-02 -3.410418e-02
## 2-89546      -1.402711e-02  1.112728e-02
## 2-89549      2.053437e-04 -3.214801e-03
## 2-89609      -5.177429e-03 -6.332676e-03
## 2-89616      -2.032900e-03 -6.663304e-03
## 2-89717      6.912162e-03  1.793118e-02
## 2-89828      -2.521094e-02 -4.365790e-03
## 2-89927      1.438097e-02  3.197785e-02
## 2-89929      1.679001e-02 -3.894987e-03
## 2-89942      -4.256562e-02 -3.360493e-02
## 2-89994      -1.641984e-02 -2.456397e-03
## 2-90027      -1.266813e-02 -8.509484e-04
## 2-90091      8.722793e-03 -4.187854e-03
## 2-90099      2.208657e-02  6.506259e-03
## 2-90144      -2.569162e-02  2.599761e-03
## 2-90186      9.280876e-03 -4.308090e-03
## 2-90212      -6.675602e-03  1.245714e-02
## 2-90258      8.407335e-04 -6.974444e-03
## 2-90271      2.152848e-02  6.626495e-03
## 2-90314      1.617928e-02  3.933006e-02
## 2-90347      -2.306510e-02 -8.183980e-04
## 2-90530      8.936181e-03 -3.690777e-03
## 2-90565      9.708295e-03 -4.883338e-03
## 2-90599      -5.764143e-02 -3.082648e-02
## 2-90758      1.198675e-03 -5.551696e-03
## 2-90785      -7.310852e-03 -1.783476e-02
## 2-90807      -6.788217e-03  1.110648e-01
## 2-90885      2.580262e-02  2.379662e-04
## 2-90923      3.934446e-03  1.476827e-02
## 2-90929      1.389429e-02  6.938218e-03
## 2-91031      2.816091e-02  2.372126e-03
## 2-91162      -7.129282e-03  1.131546e-02
## 2-91178      1.198675e-03 -5.551696e-03
## 2-91283      1.946799e-02  9.326421e-03
## 2-91288      -6.328861e-03 -2.244146e-02
## 2-91296      -3.446192e-02  6.556596e-02
## 2-91331      -1.622571e-02 -2.864291e-03
## 2-91349      -1.680808e-03 -3.322608e-03
## 2-91359      -2.643205e-03 -1.176169e-02

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## 2-91359_2    1.325158e-02  3.306949e-02
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## 2-91470    -9.354746e-03  -3.758190e-02
## 2-91476     3.662320e-03   1.165268e-02
## 2-91494    -1.332924e-02  -5.011582e-03
## 2-91499     2.797941e-02  -1.980651e-02
## 2-91514     3.275858e-06  -8.488275e-03
## 2-91537    -1.022099e-02  -1.241495e-03
## 2-91581    -1.937060e-02  -9.727198e-03
## 2-91583     2.521254e-02   8.053672e-03
## 2-91609    -4.380501e-02  -3.837066e-02
## 2-91650     1.143039e-02  -2.224694e-02
## 2-91689    -4.445979e-03   8.558512e-04
## 2-91691    -2.168555e-02   4.341291e-03
## 2-91740     3.206496e-04  -1.897087e-03
## 2-91747     9.206236e-03   2.250468e-03
## 2-91849    -2.047874e-02   4.584184e-02
## 2-91885     3.644933e-02   4.822680e-03
## 2-91928    -5.700517e-03   4.622810e-02
## 2-91985     3.587531e-02   5.107647e-03
## 2-92018     7.655472e-04  -3.922820e-03
## 2-92049    -1.432873e-02  -4.906560e-02
## 2-92095    -2.121769e-02   1.607416e-02
## 2-92100    -1.432873e-02  -4.906560e-02
## 2-92136    -9.246442e-04  -6.527955e-03
## 2-92254    -2.815277e-02  -3.230265e-02
## 2-92259     3.581215e-03  -3.549661e-03
## 2-92390    -2.280257e-02   1.054586e-01
## 2-92431     2.421669e-03  -9.975087e-03
## 2-92440    -8.888266e-03   1.062032e-03
## 2-92466     1.306426e-02  -4.338844e-02
## 2-92467    -1.601070e-02  -4.659423e-03
## 2-92481     1.629898e-03  -9.256218e-03
## 2-92485    -5.043421e-03   5.157476e-04
## 2-92486     2.295080e-02   1.367772e-02
## 2-92561     6.039034e-03   1.621515e-02
## 2-92569     1.169812e-02  -2.491394e-03
## 2-92573     4.822462e-02   8.294641e-03
## 2-92639     3.303237e-03  -1.658942e-02
## 2-92667    -1.330713e-02  -4.759223e-02
## 2-92694    -3.263753e-02   6.137225e-02
## 2-92703     1.329486e-02  -4.179540e-03
## 2-92703_2   -1.707791e-02  -4.962288e-02
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## 2-92761     1.176794e-01  -7.891706e-02
## 2-92787    -7.552593e-04  -6.738194e-03
## 2-92864     1.828366e-02  -6.962135e-03
## 2-92874    -5.013544e-03  -3.734721e-03
## 2-92986    -1.151099e-02   9.156426e-03
## 2-93010    -8.326809e-02   7.608297e-02
## 2-93018     1.370736e-02   6.736344e-03
## 2-93021    -2.695127e-02   5.246673e-02
## 2-93051     1.329486e-02  -4.179540e-03

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## 2-93077      -3.920286e-02 -1.315843e-02
## 2-93111      -7.003133e-03  5.083713e-02
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## 2-93172      -1.146975e-02 -5.179772e-02
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## 2-93203      2.573170e-03  9.904588e-03
## 2-93221      1.577018e-02  7.905865e-03
## 2-93243      -3.454126e-02 -3.429266e-02
## 2-93249      3.938698e-02 -1.953845e-02
## 2-93319      -8.109050e-03  5.457873e-02
## 2-93322      -2.866245e-02  6.417047e-02
## 2-93349      1.376308e-02  1.735576e-03
## 2-93360      -3.326183e-02 -5.919040e-03
## 2-93364      7.175137e-03 -5.629339e-03
## 2-93391      -2.590676e-03  3.668618e-03
## 2-93406      3.040976e-02  3.413942e-02
## 2-93567      -1.293565e-03 -1.403531e-02
## 2-93590      2.906930e-04 -4.516349e-03
## 2-93606      2.906930e-04 -4.516349e-03
## 2-93609      -1.708119e-02  5.882231e-02
## 2-93693      -4.094740e-02  4.840742e-02
## 2-93711      -1.126832e-02  2.451535e-03
## 2-93713      -3.217620e-03  4.460133e-02
## 2-93913      -7.351681e-02  1.591466e-02
## 2-93930      -2.526879e-03 -6.913402e-03
## 2-93995      2.507509e-02  1.367462e-02
## 2-94023      2.253797e-03  1.145733e-02
## 2-94094      -2.156981e-02 -4.785130e-03
## 2-94119      1.168112e-01 -2.243190e-03
## 2-94128      1.147447e-02  3.450413e-03
## 2-94149      -3.476320e-02 -3.508258e-02
## 2-94167      -1.853072e-03 -1.309009e-03
## 2-94183      1.473707e-02  5.231406e-03
## 2-94187      9.872432e-04  6.690717e-03
## 2-94202      -1.530058e-03 -6.296237e-02
## 2-94204      2.208282e-02  1.362822e-02
## 2-94227      -2.559467e-02 -4.509348e-03
## 2-94232      -1.778041e-02  4.195047e-02
## 2-94246      -1.778041e-02  4.195047e-02
## 2-94269      1.824540e-03 -8.853112e-03
## 2-94317      2.352580e-02 -7.407574e-03
## 2-94488      -4.973355e-05  4.540501e-03
## 2-94651_2    2.860836e-02 -1.901515e-03
## 2-94658      6.897037e-03 -4.212931e-03
## 2-94688      2.695237e-02 -3.153544e-02
## 2-94805      -2.755156e-02  8.898620e-04
## 2-94832      1.990683e-02  3.962328e-03
## 2-94860      -3.670931e-02 -3.830093e-02
## 2-94898      -2.976274e-02  5.096203e-03
## 2-94930      2.088525e-03 -3.812365e-03
## 2-94976      -5.931536e-04  2.744087e-03
## 2-94992      -6.024761e-03 -2.732250e-03

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## 2-94994      -8.939507e-03 -2.246436e-02
## 2-94998      3.187728e-02 -3.465199e-02
## 2-95059      -1.250139e-03 -6.705342e-03
## 2-95279      -3.491942e-03 -1.742034e-02
## 2-95322      -5.345136e-03 -1.297092e-03
## 2-95323      -2.149976e-02 -2.113399e-02
## 2-95329      1.255688e-02 -2.941851e-03
## 2-95341      2.109020e-03  6.921597e-03
## 2-95369      2.865103e-04 -4.805560e-02
## 2-95425      2.109020e-03  6.921597e-03
## 2-95432      6.016222e-03  2.777235e-02
## 2-95559      -1.574393e-02  3.415629e-03
## 2-95568      -4.179688e-03 -2.811397e-02
## 2-95575      5.897983e-02  1.001873e-01
## 2-95602      5.280579e-02 -4.689367e-02
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## 2-95703      -3.526513e-03 -2.592390e-02
## 2-95769      3.231272e-03  1.853640e-02
## 2-95792      -3.526513e-03 -2.592390e-02
## 2-95798      -1.342608e-02  6.848299e-03
## 2-95805      1.225529e-01 -8.091929e-02
## 2-95818      9.106561e-03  3.770837e-04
## 2-95823      3.231272e-03  1.853640e-02
## 2-95853      -8.717203e-03 -2.216465e-02
## 2-95887      1.723122e-02  8.745669e-03
## 2-95922      -2.901097e-02  9.029229e-04
## 2-95933      -1.829622e-02 -2.802123e-02
## 2-95997      4.643022e-03  1.557319e-02
## 2-96016      -1.341496e-02  1.545022e-02
## 2-96091      1.788606e-02  6.270632e-03
## 2-96092      -7.629534e-03 -5.891398e-03
## 2-96093      3.796628e-03  2.032402e-02
## 2-96109      9.930700e-03 -1.053029e-03
## 2-96231      -2.424127e-02 -2.115608e-02
## 2-96285      -1.112247e-03 -1.367686e-02
## 2-96286      3.796628e-03  2.032402e-02
## 2-96305      -3.994861e-03 -4.684933e-03
## 2-96319      -1.064635e-02 -1.171315e-02
## 2-96321      -3.235480e-02 -8.292041e-03
## 2-96330      2.683812e-03  2.891701e-02
## 2-96333      -7.206143e-03 -6.239930e-03
## 2-96384      -3.303321e-03 -2.681723e-02
## 2-96403      6.833973e-04 -5.790050e-03
## 2-96432      -2.149976e-02 -2.113399e-02
## 2-96542      4.394731e-03  8.287266e-02
## 2-96557      -1.621660e-02  4.092877e-02
## 2-96585      -7.151008e-03  9.706472e-02
## 2-96602      -4.601563e-03 -6.661878e-03
## 2-96606      -1.215796e-02 -1.614718e-02
## 2-96644      2.065434e-02  7.616885e-03
## 2-96645      -5.081858e-03 -2.502325e-02
## 2-96739      2.065434e-02  7.616885e-03
## 2-96793      -6.619056e-03  3.102458e-03
## 2-96795      -3.474605e-02 -1.833045e-02

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## 2-97056      -5.717609e-02  -2.461461e-04
## 2-97192      1.085989e-02  -6.786848e-03
## 2-97193      -3.360855e-02  -5.723281e-03
## 2-97193_2    -2.589621e-02  3.336349e-02
## 2-97232      -2.326014e-03  -1.378237e-02
## 2-97273      -6.337709e-03  -4.891184e-03
## 2-97288      -1.122031e-02  -5.210676e-03
## 2-97362      -3.346254e-03  -1.434785e-02
## 2-97385      -1.265107e-02  1.794179e-02
## 2-97385_2    -1.265107e-02  1.794179e-02
## 2-97502      -1.914587e-02  -1.161131e-02
## 2-97508      1.303664e-02  2.893273e-02
## 2-97508_2    -1.135862e-02  1.253950e-03
## 2-97517      2.815701e-02  -8.829923e-03
## 2-97549      -4.924681e-03  1.862561e-03
## 2-97568      -3.760164e-03  -2.239623e-02
## 2-97570      1.136968e-03  -3.655788e-03
## 2-97588      2.084487e-03  1.079529e-02
## 2-97699      -2.364295e-02  9.966164e-04
## 2-97804      -2.403920e-02  2.284394e-03
## 2-97913      -7.404459e-03  -1.632984e-02
## 2-97922      -8.706204e-03  -3.098032e-02
## 2-97939      -1.089740e-02  5.571485e-05
## 2-97969      -1.104222e-02  -5.938929e-03
## 2-97992      1.518705e-02  3.632917e-03
## 2-98008      -1.688834e-02  6.289111e-02
## 2-98025      -1.337061e-02  1.932494e-03
## 2-98040      -2.849062e-02  8.850092e-04
## 2-98041      -3.970986e-02  -3.608254e-02
## 2-98092      -6.692201e-03  -1.600553e-03
## 2-98098      3.230648e-02  1.807026e-02
## 2-98152      -2.468893e-02  -1.233698e-02
## 2-98154      -2.710550e-02  3.651426e-02
## 2-98170      -3.353655e-02  -4.719990e-03
## 2-98195      -5.963163e-03  -3.538400e-03
## 2-98231      1.493971e-02  -3.244861e-02
## 2-98234      6.317797e-04  -1.815419e-03
## 2-98281      8.407280e-03  -2.056364e-02
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## 2-98520      3.037467e-02  5.180340e-04
## 2-98538      -1.292352e-02  -1.122908e-02
## 2-98547      -3.999413e-03  -2.381645e-02
## 2-98560      9.989675e-02  4.024876e-03
## 2-98580      1.639571e-02  3.390200e-02
## 2-98586      3.133993e-03  -2.433672e-03
## 2-98659      -4.085834e-02  -2.972001e-02
## 2-98662      2.003798e-02  -6.360899e-02
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## 2-98770 -2.099101e-02 6.614442e-02
## 2-98776 -5.144195e-02 -4.231345e-02
## 2-98804 -4.161541e-02 -3.040754e-02
## 2-98864 8.759140e-03 1.356413e-03
## 2-98892 -2.616782e-04 -3.480268e-03
## 2-98927 -6.674806e-03 -1.474409e-02
## 2-99054 1.010869e-02 5.496968e-03
## 2-99142 4.372822e-03 2.270882e-02
## 2-99178 3.634604e-03 2.567052e-02
## 2-99266 4.067744e-03 2.336926e-02
## 2-99269 -1.581594e-02 -1.020130e-03
## 2-99326 1.696934e-02 6.244114e-03
## 2-99328 -1.264990e-02 7.096397e-04
## 2-99341 -4.305195e-03 3.147068e-02
## 2-99342 1.001246e-02 -1.793506e-03
## 2-99493 -1.077415e-02 -1.025508e-03
## 2-99495 -3.870478e-03 -2.315973e-02
## 2-99512 6.098825e-05 -5.506158e-03
## 2-99522 -6.569654e-03 -1.414970e-02
## 2-99570 -2.991752e-02 -3.649014e-02
## 2-99684 8.510431e-03 -1.679600e-02
## 2-99709 -1.936877e-02 -7.917680e-03
## 2-99743 5.394428e-02 8.484527e-02
## 2-99770 -1.634543e-02 -4.284085e-03
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## 2-99880 -2.993407e-03 3.137461e-05
## 2-99936 -2.925329e-02 -1.807151e-02
## 2-99973 -1.239315e-03 -6.329370e-03
## 3-100007 -6.471352e-03 -1.279054e-02
## 3-100023 -1.245477e-02 -4.049594e-04
## 3-100050 2.802989e-02 -6.262996e-03
## 3-100057 -1.368824e-02 -3.366723e-03
## 3-100109 2.050686e-03 1.076620e-02
## 3-100145 -1.646773e-02 -2.074446e-03
## 3-100170 1.323253e-02 1.378912e-02
## 3-100257 2.739651e-02 2.731154e-02
## 3-100259 4.622790e-02 -7.850661e-03
## 3-100371 1.363860e-02 1.151400e-02
## 3-100398 9.830398e-03 3.737457e-02
## 3-100436 3.559691e-03 -8.430709e-03
## 3-100448 3.114810e-02 3.589729e-02
## 3-100449 -1.368824e-02 -3.366723e-03
## 3-100487 4.431580e-02 -2.581344e-02
## 3-100502 -3.904391e-02 4.673500e-03
## 3-100509 2.215587e-02 -1.767769e-02
## 3-100515 8.209580e-03 -4.866929e-03
## 3-100567 2.698227e-03 1.212943e-02
## 3-100644 4.431580e-02 -2.581344e-02
## 3-100772 -1.080868e-02 5.219291e-03
## 3-100787 -6.193852e-03 -7.165000e-03
## 3-100800 1.967353e-02 6.238740e-03
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## 3-101062     -1.195637e-02  8.457777e-02
## 3-101114     -4.986581e-02 -1.242614e-02
## 3-101238     -1.072529e-02 -2.734760e-03
## 3-101248      1.353821e-02  5.999166e-03
## 3-101397      3.569861e-02 -1.094475e-02
## 3-101423     -1.553849e-02  5.958632e-02
## 3-101430      7.515395e-02 -3.592903e-02
## 3-101471     -6.100147e-02  5.466096e-02
## 3-101495     -8.849325e-03  5.093991e-02
## 3-101511      7.907970e-03  2.134508e-02
## 3-101549     -6.139809e-04  3.036998e-03
## 3-101574      9.271682e-02 -7.110308e-02
## 3-101577     -1.227378e-02 -4.147540e-02
## 3-101603      8.474657e-03 -3.834257e-03
## 3-101637      5.700314e-02  3.708916e-02
## 3-101682     -9.709340e-03  1.035346e-02
## 3-101685      2.578647e-03 -3.001367e-03
## 3-101704     -2.800997e-02  7.642100e-04
## 3-101707      6.226276e-02 -1.023400e-02
## 3-101734     -9.044532e-03  7.535981e-03
## 3-101760      6.226276e-02 -1.023400e-02
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## 3-101850     -2.756794e-03 -2.029872e-04
## 3-102109     -1.681066e-02 -4.474969e-03
## 3-102128      1.984539e-02  8.504308e-03
## 3-102161      1.421710e-02  2.367858e-02
## 3-102223      1.892092e-02  9.210937e-04
## 3-102373      4.158096e-02 -7.210897e-02
## 3-102375      1.292935e-03  6.941968e-03
## 3-102413     -9.029359e-03 -2.380244e-03
## 3-102414      2.272077e-02  1.346184e-02
## 3-102484     -2.507595e-03 -1.457083e-02
## 3-102537      2.550299e-02  2.870676e-02
## 3-102619      1.283487e-02  5.997609e-03
## 3-102628      1.444617e-02  2.362766e-02
## 3-102712     -4.820060e-02  2.216026e-03
## 3-102760     -6.690041e-04 -3.249834e-03
## 3-102916      5.590114e-02 -1.543371e-02
## 3-102924      1.146155e-02  2.638265e-02
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## 3-103182      1.307278e-02  6.394475e-03
## 3-103206     -2.014764e-02 -1.166259e-02
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## 3-103332     -1.806850e-02  6.793164e-02
## 3-103447      1.015003e-02  1.028243e-02
## 3-103453      6.143154e-02 -3.503557e-02
## 3-103456     -9.756188e-04 -3.270621e-03
## 3-103479      2.024546e-03  4.254835e-03
## 3-103510      1.606113e-02  4.625824e-03
## 3-103541     -7.267786e-03  2.644463e-02
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## 3-103771     -1.648503e-02  7.172820e-02
## 3-103788     -1.155876e-02  3.010885e-02
## 3-103924      7.249139e-02 -6.493607e-02
## 3-104038     -1.897741e-02 -1.836768e-02
## 3-104050      3.516707e-03  1.517847e-02
## 3-104141      2.753171e-02  3.261871e-02
## 3-104209     -1.198203e-02  1.446857e-03
## 3-104271     -1.731736e-02  4.518944e-02
## 3-104327      7.457578e-03  2.220519e-02
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## 3-104437     -3.397460e-03 -8.632911e-03
## 3-104631     -3.523943e-02 -1.165062e-02
## 3-104642      1.963382e-02 -1.064542e-02
## 3-104647      1.372805e-02  4.141902e-02
## 3-104659     -6.266879e-02  2.563977e-02
## 3-104732     -6.734151e-03 -4.366633e-03
## 3-104763     -1.355025e-02  1.590700e-02
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## 3-104902      4.057318e-03  1.349639e-02
## 3-104903      2.241368e-04 -2.528167e-03
## 3-104946     -1.548001e-02  2.947417e-02
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## 3-105169     -9.943436e-03 -1.124506e-02
## 3-105241     -2.646682e-02 -9.823969e-04
## 3-105286     -5.758000e-02 -9.729822e-03
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## 3-105801     -1.102813e-02 -4.668290e-02
## 3-105807     -2.882317e-02 -4.390069e-03
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## 3-105873      6.222599e-03  2.217094e-02

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## 3-106203      8.100868e-03 -2.877836e-04
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## 3-106313      -3.775455e-02  2.911078e-02
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## 3-106457      -4.121930e-03 -1.108714e-02
## 3-106500      -4.121930e-03 -1.108714e-02
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## 3-106512      3.338268e-02  1.390793e-02
## 3-106530      -1.301761e-03 -1.255750e-02
## 3-106590      -1.436934e-02 -1.715852e-02
## 3-106592      -9.987872e-03  2.864745e-02
## 3-106608      -4.121930e-03 -1.108714e-02
## 3-106649      -4.121930e-03 -1.108714e-02
## 3-106756      9.443015e-02 -3.369404e-02
## 3-106819      7.038021e-03 -3.845359e-03
## 3-106832      -1.717680e-02 -4.059224e-03
## 3-106852      -1.641557e-02 -3.396290e-03
## 3-106955      7.747016e-04 -6.045400e-03
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## 3-107012      -7.152279e-02 -6.732306e-02
## 3-107023      2.753130e-02  5.620042e-02
## 3-107110      1.421620e-02  6.958348e-03
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## 3-107254      9.502384e-03 -1.825233e-03
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## 3-107402      -2.988445e-02  3.526620e-03
## 3-107464      -1.475983e-02 -1.745625e-02
## 3-107485      1.021891e-02  9.087443e-03
## 3-107501      -8.637192e-03 -4.637023e-03
## 3-107516      1.110254e-02  2.152380e-02
## 3-107538      8.088371e-03 -2.143566e-02
## 3-107538_2    -1.475983e-02 -1.745625e-02
## 3-107573      -1.971940e-02 -1.691783e-02
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## 3-107905      -4.819533e-04 -7.118856e-03
## 3-107933      9.268637e-03 -4.617156e-03
## 3-108026      -4.466698e-02 -3.753260e-02
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## 3-108117 -1.108040e-02 -8.036863e-03
## 3-108150 -3.965908e-02 -3.126120e-02
## 3-108178 -1.710424e-03 -3.629215e-03
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## 3-108239 1.017907e-03 7.878670e-03
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## 3-108277 1.019212e-02 8.350412e-03
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## 3-109234 -1.330431e-02 4.826511e-02
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## 3-109289 1.908206e-02 3.492083e-03
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## 3-109466 2.566072e-02 7.639594e-03
## 3-109482 1.162220e-02 2.951064e-03
## 3-109489 1.458640e-02 2.680448e-03
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## 3-109778 1.915311e-02 5.132178e-03
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## 3-110112 3.083914e-03 6.723371e-03
## 3-110148 -1.696031e-02 1.643247e-03
## 3-110160 -2.511394e-03 -8.997235e-03
## 3-110186 4.637156e-03 1.557836e-03
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## 3-110959      1.150023e-02 -3.343844e-03
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## 3-112241      -1.835827e-03  4.563293e-04
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## 3-112265      -3.399277e-02 -5.356029e-03
## 3-112276      -8.424430e-03  2.819777e-02
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## 3-112320      7.598529e-03  1.962110e-02
## 3-112321      3.913849e-02  1.120479e-02
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## 3-112726      -2.852961e-02 -7.498691e-04
## 3-112794      -1.730289e-03 -2.649613e-02
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## 3-112925      -1.518290e-02  2.967232e-02
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## 3-113367      2.503253e-03 -2.333632e-02
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## 3-115470 1.668971e-02 3.045123e-02
## 3-115540 1.026542e-05 2.276068e-03
## 3-115578 6.825575e-03 2.339524e-02
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## 3-118467 5.342025e-03 1.828826e-02
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## 3-119236  -1.085343e-02  -1.050737e-02
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## 3-119437   1.137544e-02   3.489764e-03
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## 3-119717   9.854127e-03   1.961055e-03
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## 3-119796  -1.793131e-02   3.911502e-02
## 3-119904  -1.227742e-01  -4.125759e-02
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## 3-119983   7.825844e-03  -1.487550e-03
## 3-120057   9.300299e-03   6.194568e-03
## 3-120081  -7.736461e-03  -1.237615e-03
## 3-120136   1.043761e-02   1.005405e-03
## 3-120158   4.604110e-02  -1.605380e-02
## 3-120160  -2.017734e-02  -7.236600e-03
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## 3-120167  -1.696465e-03   1.646141e-03
## 3-120197  -9.525975e-03   5.087260e-02
## 3-120258   2.049052e-02  -6.922870e-03
## 3-120276   2.728315e-02   5.573447e-03
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## 3-120388   8.327500e-03   1.151617e-02
## 3-120457   1.486950e-02   4.885349e-03
## 3-120468   1.377432e-02   2.580424e-02
## 3-120503   4.899877e-03   2.416021e-02
## 3-120520   1.154160e-02   1.321426e-03
## 3-120550  -3.146611e-04   9.229458e-04

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## 3-120631 -5.759687e-03 1.308718e-02
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## 3-120821 5.351634e-03 2.457058e-02
## 3-120869 -2.587755e-04 -6.103260e-03
## 3-120919 5.218179e-03 -5.807702e-03
## 3-120967 4.604110e-02 -1.605380e-02
## 3-120979 -3.326716e-03 -9.982359e-03
## 3-121047 1.545217e-02 9.798117e-03
## 3-121106 -3.680882e-03 4.790395e-03
## 3-121114 -1.472100e-02 3.322488e-02
## 3-121173 9.051848e-03 -1.779274e-03
## 3-121195 -2.465463e-02 1.871225e-02
## 3-121321 1.920913e-02 3.221610e-03
## 3-121358 1.759826e-03 1.392246e-02
## 3-121366 -1.365811e-02 -9.125358e-03
## 3-121384 -6.407691e-03 -9.870560e-03
## 3-121411 -1.162146e-02 2.316771e-02
## 3-121436 -9.427212e-04 -1.593578e-03
## 3-121471 -2.101765e-02 -1.104540e-02
## 3-121495 2.955052e-02 5.343624e-02
## 3-121498 4.604110e-02 -1.605380e-02
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## 3-121572 -2.082958e-02 -2.036568e-02
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## 3-121619 2.596655e-03 5.686429e-03
## 3-121656 1.246276e-02 4.623194e-03
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## 3-121841 -1.112963e-03 -6.234372e-03
## 3-121965 -4.747688e-02 -3.807832e-02
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## 3-122292 1.521867e-02 1.217842e-02
## 3-122294 1.333899e-02 -3.784214e-04
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## 3-122726 -1.535664e-02 5.635287e-03
## 3-122794 -2.368694e-02 -2.335535e-02
## 3-122833 6.186216e-02 -4.914315e-02
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## 3-122908 -4.221603e-03 -4.033649e-03

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## 3-122980 -1.730961e-02 -8.936575e-03
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## 3-123303 -8.238562e-03 -4.336175e-02
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## 3-124370 -7.153663e-03 -1.492226e-03
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## 3-125082 -1.761555e-02  1.611189e-03
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## 3-125485      2.671848e-03  1.352037e-02
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## 3-125629      4.513048e-02 -2.821550e-02
## 3-125632      -8.819858e-03  3.013262e-02
## 3-125669      -1.447688e-01  2.478201e-02
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## 3-125829      -3.362235e-03  3.330064e-02
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## 3-126046      -7.435697e-03  1.322331e-02
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## 3-126072      2.589652e-02  2.592319e-02
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## 3-126259      2.964071e-03  1.347344e-03
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## 3-127174 9.909760e-02 -7.180262e-02
## 3-127194 -1.680311e-03 -6.352564e-03
## 3-127374 -3.233147e-02 1.609914e-02
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## 3-132539 7.279903e-02 1.049560e-03
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## 3-133102 4.596279e-03 3.672182e-03
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## 3-134532 -5.606791e-02 -6.734764e-02
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## 3-138627 1.797438e-02 7.896317e-04
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## 3-144579 -4.297748e-03  1.702082e-02
## 3-144583  1.456213e-02  8.895927e-03
## 3-144599 -9.508615e-03 -1.165434e-03
## 3-144607 -6.003008e-02  1.132927e-02
## 3-144609 -2.718257e-03 -2.924453e-02
## 3-144634  7.906486e-03 -1.032823e-03
## 3-144692  1.475202e-03  3.405576e-04
## 3-144695  8.956236e-03  9.111847e-03
## 3-144740 -1.226838e-03  9.522022e-03
## 3-144760  7.883316e-03 -7.449745e-04
## 3-144760_2 2.125668e-04 -4.319791e-03
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## 3-144850 -4.047593e-03 -2.093065e-02
## 3-144851 -1.007534e-02  1.589640e-02
## 3-144863 -2.616149e-02 -2.428564e-02
## 3-144879 -1.628479e-02  3.131115e-02
## 3-144951  8.379004e-03  9.730492e-04
## 3-144961  2.109936e-03  7.279649e-03
## 3-144986  1.403217e-02 -1.615002e-03
## 3-144993  8.077853e-04 -1.935919e-02
## 3-145003  1.686938e-02  5.982408e-03
## 3-145026  8.502728e-03 -8.425016e-03
## 3-145039  3.934335e-02 -1.725563e-02
## 3-145066 -1.281062e-02  2.814354e-02
## 3-145117 -3.308889e-02  2.414445e-02
## 3-145118  8.879639e-02 -6.751546e-02
## 3-145150 -5.034742e-04 -4.743869e-04
## 3-145160 -1.276121e-02 -1.690348e-02
## 3-145198  2.465617e-03  1.296243e-03
## 3-145230  1.091353e-01 -2.571718e-02
## 3-145230_2 2.074764e-02  3.863631e-02
## 3-145235 -6.840315e-02 -3.767483e-02
## 3-145255 -2.586359e-02 -2.401573e-02
## 3-145285 -8.184075e-03 -3.484815e-02
## 3-145303 -2.586359e-02 -2.401573e-02
## 3-145354  8.580783e-02 -9.093280e-03
## 3-145541 -2.704025e-02 -1.941934e-03
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## 3-145581  8.295790e-03 -8.150540e-03
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## 3-145744  7.394906e-02 -3.394795e-02
## 3-145831 -2.201189e-02  1.706414e-02
## 3-145849  8.295790e-03 -8.150540e-03
## 3-145850 -1.091109e-02  1.702247e-02
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## 3-145966 -1.405406e-03 -1.910322e-04
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## 3-146087 -4.143790e-02 -6.486871e-03
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## 3-146168 1.737820e-04 -1.714176e-02
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## 3-146229 1.560674e-02 9.363200e-03
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## 3-146264 -2.445612e-02 -8.665307e-03
## 3-146348 -4.227379e-02 -3.640581e-03
## 3-146357 2.226821e-02 5.323080e-02
## 3-146373 -2.086544e-02 3.466623e-02
## 3-146450 1.088142e-01 -2.615448e-02
## 3-146468 -1.466734e-02 -1.693194e-02
## 3-146535 -2.005520e-02 4.006110e-02
## 3-146541 -1.519376e-02 -2.129442e-02
## 3-146563 8.032210e-02 -5.340474e-04
## 3-146565 1.479013e-02 2.129296e-03
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## 3-146577 -4.761741e-02 -8.222504e-03
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## 3-146804 -2.893732e-02 1.220461e-03
## 3-146916 7.648161e-03 1.374876e-03
## 3-146980 -1.419999e-02 2.320057e-02
## 3-146982 -1.332346e-02 -8.671356e-03
## 3-147028 -5.960295e-03 9.169092e-03
## 3-147040 1.919530e-02 4.731373e-02
## 3-147085 1.824949e-02 3.991870e-02
## 3-147127 1.078421e-02 5.077346e-03
## 3-147143 8.195481e-04 -9.954011e-03
## 3-147154 2.339745e-02 2.360997e-03
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## 3-147232 -4.173049e-02 -7.464804e-03
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## 3-147290 1.020486e-02 1.881992e-03
## 3-147291 2.849212e-02 -2.562043e-02
## 3-147301 -3.673177e-02 -4.456679e-02
## 3-147308 3.212049e-03 -2.556328e-02
## 3-147405 -1.595909e-02 -7.137577e-03
## 3-147427 -7.597307e-03 -5.540037e-03
## 3-147443 -1.546822e-02 2.613883e-02
## 3-147524 -3.306693e-03 -4.344356e-02
## 3-147538 3.913078e-02 -1.293584e-02
## 3-147586 -5.625472e-02 -5.517902e-05
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## 3-147645 1.479596e-03 -6.837039e-03
## 3-147651 1.416054e-02 7.310829e-03
## 3-147662 -2.241713e-02 6.963061e-02
## 3-147734 1.748253e-03 -6.374897e-03
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## 3-147920      -8.098531e-03  -2.626777e-03
## 3-147936      -1.043361e-02  1.427047e-02
## 3-148030      -3.011576e-02  -1.865808e-02
## 3-148072      8.445950e-02  -3.195827e-02
## 3-148239      3.564452e-02  -1.159507e-02
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## 3-148410      -1.505335e-02  -4.353667e-04
## 3-148436      3.031235e-02  -3.720117e-02
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## 3-148875      -4.173049e-02  -7.464804e-03
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## 3-148913      -1.110241e-02  7.383398e-04
## 3-148925      2.527386e-03  -1.873512e-02
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## 3-149462      -5.777369e-02  -1.513844e-02
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## 3-149568      -4.834027e-03  1.021681e-02
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## 3-149924      1.036359e-02  -4.495953e-04

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## 4-150148      -1.262062e-03  3.584626e-03
## 4-150158      -1.191391e-02  -6.764401e-03
## 4-150203      -6.412242e-03  -1.012880e-02
## 4-150220      -2.776575e-03  -6.515928e-03
## 4-150277      1.383485e-02  -4.826588e-02
## 4-150351      4.385862e-02  -2.041373e-02
## 4-150420      -3.866943e-03  -8.847851e-03
## 4-150447      1.050517e-02  1.198548e-03
## 4-150451      4.714158e-02  -1.653489e-02
## 4-150455      4.385862e-02  -2.041373e-02
## 4-150458      -4.461487e-02  -7.298904e-03
## 4-150472      8.828085e-03  -8.381217e-05
## 4-150490      -4.866452e-02  -1.744809e-02
## 4-150496      -2.222735e-02  2.356709e-02
## 4-150504      3.946078e-03  3.583072e-02
## 4-150514      5.892749e-02  -1.598908e-02
## 4-150521      -2.833004e-02  -5.681747e-03
## 4-150684      -7.273570e-04  -1.736312e-02
## 4-150690      2.163222e-02  6.018846e-03
## 4-150716      1.704090e-02  3.231505e-02
## 4-150744      2.324710e-02  -4.448242e-02
## 4-150808      1.208085e-03  4.504581e-03
## 4-150819      1.374993e-02  -7.926498e-02
## 4-150933      8.049799e-03  2.480932e-02
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## 4-151106      -1.100717e-02  -3.109543e-02
## 4-151118      1.814778e-02  1.507142e-02
## 4-151143      -5.253613e-03  1.153546e-02
## 4-151163      -3.018390e-02  1.998553e-02
## 4-151170      4.298778e-03  7.173882e-03
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## 4-151250      5.397271e-03  1.519161e-02
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## 4-151275      4.483462e-03  -3.006660e-03
## 4-151295      -2.605811e-02  6.338068e-02
## 4-151298      2.556864e-02  -2.412099e-02
## 4-151307      -2.525801e-02  1.589849e-02
## 4-151309      -3.834020e-02  1.426584e-02
## 4-151366      2.362042e-04  -2.359743e-02
## 4-151454      6.050946e-04  -7.404267e-03
## 4-151461      -1.048702e-02  1.365951e-02
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## 4-151838 -8.039188e-03 3.990746e-03
## 4-151888 5.752804e-03 3.758705e-02
## 4-151894 -2.653998e-02 -8.561105e-03
## 4-152110 6.735404e-02 -2.585616e-02
## 4-152151 -4.992052e-03 8.616137e-03
## 4-152154 -1.962257e-02 3.521444e-02
## 4-152172 -9.667932e-03 1.147271e-02
## 4-152183 -5.299946e-03 1.187187e-02
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## 4-152295 3.943658e-02 -1.911219e-02
## 4-152372 3.943658e-02 -1.911219e-02
## 4-152401 3.383604e-02 9.528808e-03
## 4-152447 -3.864335e-02 -9.077338e-02
## 4-152685 -3.143003e-03 -3.807856e-02
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## 4-152747 7.968130e-03 2.991709e-03
## 4-152771 -1.626222e-02 -1.482182e-02
## 4-152781 7.130303e-03 1.971461e-02
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## 4-152804 4.269544e-03 -3.001387e-03
## 4-152821 -6.472951e-03 -1.429598e-02
## 4-152847 -3.834652e-03 -9.721266e-03
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## 4-152869 -1.616985e-02 -4.190274e-03
## 4-152871 1.390039e-02 5.809399e-03
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## 4-152958 8.251193e-03 3.186405e-03
## 4-152966 1.861024e-02 7.511966e-03
## 4-152969 9.214406e-03 1.177355e-02
## 4-153011 8.081823e-03 4.981201e-03
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## 4-153098 1.155522e-02 9.889131e-03
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## 4-153200 4.042861e-03 3.477484e-02
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## 4-153331 -2.428377e-03 3.953630e-04
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## 4-153341 4.417179e-02 -4.304780e-02
## 4-153425 1.466078e-02 4.986998e-03
## 4-153499 2.948059e-02 1.597594e-02
## 4-153512 -1.542938e-02 3.952110e-02
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## 4-153582 6.704046e-03 6.711056e-03
## 4-153592 7.056701e-02 -1.090830e-02
## 4-153599 -1.303189e-02 2.357143e-02
## 4-153624 2.293523e-03 -5.369469e-03
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## 4-153711 -3.170265e-02 -2.521396e-02

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## 4-153848      3.178625e-02  -2.868537e-02
## 4-153852     -2.174327e-02   7.028296e-03
## 4-153908      1.740931e-02   2.249395e-03
## 4-153960      1.518005e-03  -6.309374e-03
## 4-153978     -3.731679e-02  -3.149544e-02
## 4-154114     -9.676095e-03   1.520634e-02
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## 4-154251     -1.625253e-02   7.004517e-03
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## 4-154369      2.006799e-02   1.254866e-02
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## 4-155355     -7.541761e-03   2.028687e-02
## 4-155388     -5.185623e-02  -1.322279e-02
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## 4-155773     -8.616628e-03  -4.960984e-03
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## 4-155862     -3.100349e-02   1.427185e-01
## 4-155866     -7.541761e-03   2.028687e-02
## 4-155958      4.067404e-03   9.071508e-03
## 4-156027     -7.541761e-03   2.028687e-02
## 4-156088      4.399252e-02  -3.659639e-02
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## 4-156286 -2.012016e-02 -4.105389e-02
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## 4-157161 -1.551866e-02 -4.217304e-03
## 4-157162 -8.019313e-03 -5.178082e-03
## 4-157216 -7.541761e-03 2.028687e-02
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## 4-157375 8.545064e-03 3.155664e-03
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## 4-157580 4.112804e-02 -3.695475e-02
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## 4-157655 5.541232e-03 -5.836326e-04
## 4-157719 -2.087374e-02 5.173980e-02
## 4-157728 -2.442117e-03 1.835185e-02
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## 4-158007 8.027240e-02 -6.641324e-04
## 4-158096 -4.267785e-03 -3.303507e-02
## 4-158102 -1.233286e-02 -2.466512e-02
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## 4-159384      -2.185262e-02 -2.105173e-02
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## 4-160409 -4.853583e-03 5.763480e-03
## 4-160414 -2.924638e-02 -9.564482e-03
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## 4-168147    4.990996e-04 -7.544976e-03
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## 4-169040   -1.769652e-04 -7.413587e-03
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## 4-179781 6.240627e-02 -4.004291e-02
## 4-179792 -1.720892e-02 6.148679e-02
## 4-179809 3.971869e-02 -1.057811e-02
## 4-179921 -1.408558e-02 -4.263744e-03
## 4-179981 -5.730089e-02 -1.092684e-02
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## 4-180243 -2.463246e-02 -1.709613e-02
## 4-180444 1.315088e-02 -7.702053e-03
## 4-180463 -6.666431e-03 -7.212686e-03
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## 4-180519 -3.999916e-03 6.427498e-03
## 4-180522 1.473492e-02 3.368014e-02
## 4-180536 8.578467e-03 1.225318e-02
## 4-180545 -3.999916e-03 6.427498e-03
## 4-180561 4.511482e-03 1.600554e-03
## 4-180588 2.891219e-02 -4.926974e-02
## 4-180604 8.389195e-03 2.182128e-03
## 4-180620 -9.685020e-03 2.850754e-03
## 4-180675 -1.074582e-03 -1.431259e-02
## 4-180729 1.769272e-03 -3.811529e-03
## 4-180731 -8.938674e-03 3.940524e-02
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## 4-180752 -6.395581e-02 -5.233752e-02
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## 4-180812 -6.075430e-02 -7.890442e-03
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## 4-180882 -4.003600e-03 -7.292670e-03
## 4-180954 -3.471068e-02 2.299760e-02
## 4-180987 -2.346453e-03 -2.973228e-02
## 4-181011 1.310971e-02 4.467149e-02
## 4-181049 -1.164588e-02 2.543633e-02
## 4-181063 2.118544e-02 -8.044347e-03
## 4-181074 1.205566e-02 -3.956835e-02
## 4-181126 -2.022538e-02 -1.497362e-02
## 4-181156 5.309209e-03 -2.267718e-02
## 4-181185 8.646127e-03 -7.127392e-03
## 4-181264 -8.151917e-03 2.160775e-02
## 4-181264_2 -2.730858e-03 5.615069e-03
## 4-181277 4.508538e-03 -1.173798e-02
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## 4-181501      1.816975e-02   5.541189e-03
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## 4-181609     -7.726029e-03   6.142592e-02
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## 4-182174      7.065792e-02  -3.957459e-02
## 4-182201     -6.245358e-03  -6.091444e-03
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## 4-182795     -2.747197e-02  -2.818758e-02
## 4-182878      7.954312e-03  -6.974774e-03
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## 4-183077      1.885099e-02   1.103298e-02
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## 4-183165     -3.060923e-02  -3.538462e-02
## 4-183175      5.674030e-02  -5.467764e-02
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## 4-183238     -1.627986e-02   4.694771e-03
## 4-183310     -6.742737e-03  -1.064724e-03
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## 4-183336      1.422623e-02   1.503414e-03
## 4-183367     -1.102871e-01  -2.842255e-02
## 4-183376      5.679881e-04   5.144904e-03
## 4-183391     -9.781254e-03   1.925050e-02
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## 4-185160     -1.032432e-02  7.383438e-02
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## 4-185339 -1.032432e-02 7.383438e-02
## 4-185347 3.354824e-03 -3.666333e-03
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## 4-185408 8.790505e-03 1.882868e-02
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## 4-187254 -4.825233e-02 -9.846021e-03
## 4-187315 -3.035988e-02 2.118870e-02
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## 4-187564    -7.077171e-03 -1.567993e-03
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## 4-187880    9.530555e-03  2.502655e-02
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## 4-190565 -6.760570e-03 2.099854e-02
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## 4-191237 -3.189675e-02 -3.035581e-02
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## 4-191302 -2.529358e-03 5.478985e-03

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## 4-191635    -4.973277e-03 -8.838415e-03
## 4-191717     2.534291e-03 -1.322279e-02
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## 4-191813    -2.466404e-03 -9.815208e-03
## 4-191839     7.976973e-02 -4.426910e-02
## 4-191851    -8.839221e-03  1.996259e-02
## 4-191889     1.126559e-02  1.373542e-02
## 4-191896    -3.509596e-02 -9.873376e-03
## 4-191903     5.120007e-03  3.356717e-03
## 4-191914    -2.300140e-02 -1.115021e-02
## 4-191947     7.535200e-03 -5.300653e-03
## 4-191953    -2.000417e-02 -1.063259e-03
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## 4-192108     2.509710e-03  1.374226e-02
## 4-192227    -4.500951e-02 -8.212321e-03
## 4-192249     8.142330e-03  2.798771e-03
## 4-192249_2   6.776540e-02 -4.764065e-02
## 4-192303    -7.335242e-03  1.747341e-02
## 4-192361    -6.209974e-03 -1.451939e-02
## 4-192365    -2.204051e-03 -9.903090e-03
## 4-192378     9.933825e-04  3.222700e-04
## 4-192486    -1.599953e-02 -6.105349e-03
## 4-192545     3.316056e-02  1.630882e-02
## 4-192556    -1.476395e-02  8.891474e-03
## 4-192679     4.157407e-03  5.707481e-03
## 4-192682     7.445675e-03 -4.059668e-04
## 4-192737    -5.373393e-03  9.127176e-03
## 4-192738     6.851326e-03  9.584577e-03
## 4-192744    -5.373393e-03  9.127176e-03
## 4-192771    -2.263731e-05 -7.328043e-03
## 4-192784    -1.149313e-02 -5.089345e-02
## 4-192828    -2.263731e-05 -7.328043e-03
## 4-192886    -2.194504e-03 -1.038766e-02
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## 4-192906     3.276388e-03 -1.697441e-03
## 4-192937     4.337843e-02  1.095460e-02
## 4-192948    -2.328943e-02  2.225374e-02
## 4-192951     2.842577e-03 -2.127657e-03
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## 4-193987      -6.827161e-03 -1.323572e-02
## 4-194047      1.854126e-02 -2.542416e-03
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## 4-194162      -4.092705e-03  1.248889e-02
## 4-194200      -8.551682e-03 -4.980906e-02
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## 4-194625      1.084934e-01  9.399287e-03
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## 4-194802      -3.216140e-02 -1.097547e-02
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## 4-194925 -1.529103e-02 -5.284719e-04
## 4-194941 1.542929e-03 -3.159816e-02
## 4-194977 -1.787392e-02 3.397033e-02
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## 4-195069 8.519697e-03 1.075686e-02
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## 4-195284 -6.365448e-03 3.775239e-02
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## 4-196480 1.064151e-03 1.683939e-02
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## 4-196740 2.668722e-02 7.017076e-03
## 4-196827 -1.671534e-02 1.471279e-03
## 4-196890 -1.857582e-02 4.482922e-04
## 4-196911 -6.809948e-03 1.270903e-02
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## 4-197003 -3.185263e-02 -6.071986e-03
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## 4-197114 1.137752e-03 -1.927948e-02
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## 4-197232 3.824035e-03 1.552080e-02
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## 4-197512      -6.802134e-03 -3.077983e-03
## 4-197551      -1.230305e-02  3.903785e-04
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## 4-197778      -4.629159e-02  4.828665e-02
## 4-197814      -1.261229e-02  1.090316e-02
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## 4-197906       2.604396e-04  1.304723e-02
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## 4-197979       1.759106e-02  3.892893e-02
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## 4-198146      -1.102040e-02  4.000028e-03
## 4-198186       6.123275e-04 -1.349859e-02
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## 4-198868      -1.730314e-02  1.108174e-02
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## 4-199396     -2.576204e-02  -2.365325e-02
## 4-199442      5.312746e-03  -4.827954e-03
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## 4-199596      3.684693e-03   4.962150e-03
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## 4-199829     -1.276639e-02  -1.207868e-02
## 4-199847     -4.840205e-02  -5.657654e-02
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## 5-200679     -6.767093e-04   1.109040e-02
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## 5-204327    1.937077e-02  -1.840545e-02
## 5-204459    -1.894419e-02  1.369451e-02
## 5-204516    2.143767e-02  7.630729e-03
## 5-204539    1.312112e-03  -1.941302e-02
## 5-204606    1.491335e-04  -4.161415e-03
## 5-204612    3.291668e-03  -3.342791e-03
## 5-204626    -1.912582e-02  1.295844e-02
## 5-204629    -6.615739e-02  1.366042e-01
## 5-204692    1.306591e-03  -3.234190e-02
## 5-204695    3.344581e-02  -3.264461e-02
## 5-204734    2.143767e-02  7.630729e-03
## 5-204912    -2.837361e-03  -1.108451e-02
## 5-204933    3.652657e-03  1.044744e-02
## 5-204960    7.046627e-03  1.804198e-02
## 5-205007    8.940873e-05  9.421337e-03
## 5-205061    9.278870e-04  -2.540459e-02
## 5-205080    -1.233514e-02  8.108724e-03
## 5-205114    1.112913e-03  -5.313975e-03
## 5-205125    4.076498e-02  -2.793448e-03
## 5-205207    9.855721e-03  3.584085e-03
## 5-205224    1.415012e-02  4.150604e-02
## 5-205227    4.472105e-03  8.853010e-04
## 5-205272    8.940873e-05  9.421337e-03
## 5-205274    -2.907063e-02  2.311021e-02
## 5-205289    1.239722e-02  5.132538e-03
## 5-205314    3.621397e-03  -5.898663e-03
## 5-205421    -3.403125e-02  1.582648e-02
## 5-205459    -3.112087e-02  -1.526695e-03
## 5-205470    1.571930e-02  4.375008e-03
## 5-205474    -6.316788e-02  -1.213307e-02
## 5-205474_2   -2.590227e-03  -2.511613e-02
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## 5-205559    -4.532044e-03  2.143398e-03
## 5-205593    -2.603322e-02  -3.599582e-02
## 5-205598    -1.875441e-02  7.934650e-03
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## 5-205632    3.910831e-02  8.501767e-03

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## 5-205909   -4.071812e-04  -8.609433e-03
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## 5-206006    1.057703e-02  -1.112067e-02
## 5-206018   -1.193974e-02   3.845904e-03
## 5-206144   -6.816443e-04  -9.909562e-03
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## 5-206194   -3.288845e-02   4.929488e-02
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## 5-206272    1.065534e-02  -7.409873e-04
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## 5-206402   -5.264269e-02   2.263974e-03
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## 5-206863    2.633282e-03  -1.501090e-03
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## 5-206989   -5.877072e-02  -4.875018e-02
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## 5-207455   -3.780353e-02  -4.284185e-02
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## 5-207776    1.330699e-02   2.703322e-02
## 5-207780    1.218848e-02   3.245329e-02
## 5-207814    2.553770e-03   1.422635e-02
## 5-207868   -3.186288e-02  -3.671586e-02
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## 5-207946   -3.771667e-05   7.292223e-03

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## 5-208295 9.974125e-04 -2.433768e-02
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## 5-209572 -1.629353e-02 -6.731900e-02
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## 5-210312 1.427519e-02 7.175082e-03
## 5-210362 -2.684637e-03 -1.454394e-03
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## 5-210993 -7.053796e-02 6.217185e-02
## 5-211115 7.600471e-03 1.205331e-03
## 5-211144 -4.430423e-03 -8.897105e-03
## 5-211187 -6.092941e-02 -9.725608e-03
## 5-211260 2.954714e-02 -1.519964e-02
## 5-211332 9.132385e-03 1.851908e-02
## 5-211351 -7.310952e-03 -1.561491e-02
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## 5-211357 6.887842e-03 3.245208e-04
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## 5-211588 -1.937189e-02 2.060242e-02
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## 5-212616 -6.286043e-02 -1.010739e-02
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## 5-212682 1.181264e-01 -4.071129e-02
## 5-212702 2.177802e-02 1.670847e-03
## 5-212745 5.211164e-03 1.749828e-02
## 5-212750 -1.030577e-02 -1.312598e-02
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## 5-212866 -1.589771e-03 -1.069626e-02
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## 5-213067 -3.850577e-03 9.427594e-03
## 5-213095 2.024903e-03 -4.106060e-03
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## 5-213139 1.230641e-01 -4.174811e-02
## 5-213200 3.073523e-02 -1.364289e-02
## 5-213230 -2.278679e-02 5.399775e-02
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## 5-213351 -7.190355e-03 -1.544991e-02
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## 5-213398 1.855444e-03 -3.481945e-03
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## 5-213960 -2.033949e-02 -9.125897e-04
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## 5-214028 -2.021700e-02 1.207696e-02
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## 5-214279 1.546290e-02 6.802597e-03
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## 5-214378 1.171007e-03 -4.495012e-03
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## 5-214489 -5.959055e-02 -6.455142e-03
## 5-214558 1.654572e-02 -5.551036e-02
## 5-214597 2.360120e-03 2.630472e-03
## 5-214631 1.445960e-03 -1.766662e-03
## 5-214638 -2.633503e-02 5.916472e-02
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## 5-216502 1.294706e-02 1.883273e-03
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## 5-217354 1.839792e-02 4.934247e-03
## 5-217394 -4.619150e-05 -1.262733e-02
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## 5-217465 -8.248244e-03 -1.022013e-02
## 5-217477 3.752648e-03 4.486555e-03
## 5-217494 3.752648e-03 4.486555e-03
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## 5-217660 -8.443073e-02 -1.501751e-01
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## 5-217795 -1.153416e-02 -2.359401e-03
## 5-217828 -2.176455e-02 6.117458e-03
## 5-217837 -2.114291e-02 4.589452e-02
## 5-217863 -3.788265e-03 -2.485118e-02
## 5-218008 4.591980e-04 -1.300104e-02
## 5-218018 -2.627630e-02 -8.453061e-03
## 5-218020 7.067707e-03 1.962307e-02
## 5-218033 -1.112649e-03 -2.360264e-02
## 5-218035 8.059206e-02 -3.268965e-04
## 5-218217 8.304242e-02 -4.333426e-04
## 5-218279 -1.174163e-02 4.551081e-02
## 5-218312 -1.174163e-02 4.551081e-02
## 5-218318 -2.037744e-04 -6.720315e-03
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## 5-218690     -3.990546e-02  -4.096065e-02
## 5-218692      8.304242e-02  -4.333426e-04
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## 5-218745      4.386764e-02   1.522781e-02
## 5-218816      2.272086e-03  -4.378570e-03
## 5-218828      3.484522e-02  -5.778790e-02
## 5-218880     -1.644721e-02  -5.489602e-04
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## 5-219225     -5.040988e-02   2.292424e-02
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## 5-219623      8.059206e-02  -3.268965e-04
## 5-219673     -3.921420e-04  -5.971342e-03
## 5-219691      4.641444e-03  -8.152811e-03
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## 5-219796     -1.729046e-02  -1.989684e-03
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## 5-219858     -4.994605e-04  -5.770272e-03
## 5-219871     -9.750658e-03  -1.090266e-02
## 5-219970     -1.521213e-01  -1.369555e-01
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## 5-220062      2.550928e-03   1.294957e-03
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## 5-220192     -7.368059e-04  -9.584115e-03
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## 5-220237      1.739845e-02   6.777881e-03
## 5-220242      7.881208e-03   7.113245e-04
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## 5-220536      8.178887e-03 -2.143971e-03
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## 5-220650      -1.709917e-04 -6.879456e-03
## 5-220706      6.016121e-02  2.248428e-03
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## 5-220787      3.895490e-02 -1.292280e-02
## 5-220803      1.717361e-02  6.415468e-03
## 5-220932      1.262999e-02  6.140367e-03
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## 5-222437      -1.829618e-03 -4.530518e-04
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## 5-223055    3.814088e-02  1.222255e-02
## 5-223097    -2.164222e-02  3.242220e-02
## 5-223099    1.118081e-02  3.603703e-03
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## 5-223184    -1.712517e-02  -5.789654e-03
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## 5-223254    -3.290083e-02  -2.851049e-02
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## 5-223890    -3.095291e-02  -1.075945e-02
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## 5-224949 -2.226970e-03 -2.181022e-02
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## 5-225006  6.662586e-04 -1.523465e-02
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## 5-225059  4.135480e-02 -4.775517e-02
## 5-225142 -1.540817e-02 -1.462834e-02
## 5-225184 -3.032559e-02 -3.700708e-02
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## 5-225297 -3.032373e-03 -2.997558e-02
## 5-225305 -2.221609e-03 -1.741701e-02
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## 5-225618  1.232542e-02  2.758854e-03
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## 5-226589 1.968424e-02 -4.204812e-03
## 5-226715 7.984180e-03 -2.227698e-03
## 5-226726 -8.757392e-03 -6.164200e-03
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## 5-226900 -4.792541e-03 9.751886e-03
## 5-226920 4.774189e-02 -3.968022e-02
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## 5-227293 -3.287934e-02 -3.769663e-03
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## 5-227440 -7.876574e-03 -1.669893e-02
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## 5-229733 2.022426e-03 -3.917747e-03
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## 5-229868 -5.037510e-02 -3.683309e-03
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## 5-230474 6.802874e-03 4.826059e-02
## 5-230565 3.414396e-03 2.589186e-02
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## 5-230608 -2.559155e-03 -1.108207e-02
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## 5-230753 -3.617984e-02 -5.417978e-03
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## 5-230961 2.157087e-02 6.283617e-02
## 5-230989 3.722501e-02 -9.225241e-03
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## 5-231328 9.390781e-03 1.760551e-02
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## 5-232171 7.655317e-03 1.021367e-02
## 5-232200 -1.518140e-02 -4.796920e-03
## 5-232286 2.845430e-02 -1.032043e-02
## 5-232372 -2.369550e-03 -1.097817e-02
## 5-232480 -9.065915e-03 -9.298762e-02
## 5-232492 -1.208914e-02 -5.168813e-02
## 5-232600 -7.844927e-03 -2.513630e-03
## 5-232601 -1.129776e-02 -4.825973e-02
## 5-232603 2.705192e-04 -7.538971e-03
## 5-232624 -2.215597e-03 -1.589067e-02
## 5-232754 -8.490626e-02 -1.911385e-01
## 5-232756 -1.652741e-02 1.585375e-02
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## 5-233030      2.809075e-02 -3.748259e-03
## 5-233088     -1.710771e-02 -1.617017e-02
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## 5-235630 -1.318436e-02 5.362380e-02
## 5-235645 -5.222089e-02 -9.897609e-03
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## 5-242513      1.481874e-02  3.003060e-03
## 5-242515      1.481874e-02  3.003060e-03
## 5-242531      1.233694e-03  -5.528620e-03
## 5-242561      -1.137956e-02 -1.273990e-02
## 5-242568      1.233694e-03  -5.528620e-03
## 5-242653      6.912149e-03  -3.988284e-03
## 5-242677      -1.860102e-02  7.182797e-03
## 5-242772      2.197793e-04  1.817908e-02
## 5-242904      -7.793056e-03  1.866725e-02
## 5-242926      -1.275470e-02 -6.151801e-02
## 5-242948      3.543241e-02  -2.549333e-02
## 5-243000      2.155757e-02  8.977721e-03
## 5-243123      1.288171e-02  5.848436e-03
## 5-243181      1.457440e-02  1.113642e-03
## 5-243186      2.169362e-02  4.308804e-03
## 5-243233      -4.385638e-03  1.284265e-01
## 5-243317      -1.082845e-02  1.162198e-02
## 5-243377      -8.966276e-03  -5.439549e-03
## 5-243404      1.352921e-01  -7.097642e-03
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## 5-243501      1.175552e-02  3.754294e-02

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## 5-243665     -2.336822e-02 -2.130720e-02
## 5-243742      1.215326e-02  3.950546e-03
## 5-243778      1.031092e-02  7.097149e-03
## 5-243799     -3.721247e-02 -2.355704e-02
## 5-243865      5.694057e-02  6.310065e-02
## 5-243873      6.142647e-03 -2.992858e-04
## 5-243969     -3.570625e-03 -3.296465e-03
## 5-244000     -1.047518e-01  3.358464e-02
## 5-244025      1.353159e-02  2.218172e-03
## 5-244061      3.768715e-03 -4.200301e-03
## 5-244083      6.082321e-03 -1.300315e-04
## 5-244144      1.562282e-02  7.151422e-03
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## 5-244182     -1.273374e-03 -1.076503e-02
## 5-244203      1.237224e-01  4.725208e-02
## 5-244214     -2.060307e-02  8.892627e-03
## 5-244293      5.565392e-02  5.779460e-04
## 5-244398     -1.125882e-02  1.289861e-02
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## 5-244447      1.759004e-02  6.297927e-02
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## 5-244560      9.637008e-03  3.833775e-02
## 5-244579      3.409541e-03  1.104642e-02
## 5-244647      6.096596e-03 -7.276435e-04
## 5-244667     -2.361638e-03  1.888566e-02
## 5-244669     -3.058790e-02 -4.549118e-03
## 5-244732      3.357126e-02  3.543907e-02
## 5-244746     -1.681289e-02  4.210054e-03
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## 5-244966      3.213601e-02 -4.293853e-02
## 5-244990     -6.977505e-03  6.933255e-03
## 5-245045      3.213601e-02 -4.293853e-02
## 5-245063     -9.853189e-03  1.075004e-02
## 5-245114     -1.885333e-03 -8.115259e-03
## 5-245149      6.236820e-03  1.771815e-02
## 5-245211     -2.204470e-03 -1.948554e-02
## 5-245269      3.507708e-03  9.522526e-03
## 5-245288     -4.651141e-02 -3.086054e-02
## 5-245331     -5.091597e-03 -3.426836e-02
## 5-245460      1.860084e-03  2.393819e-02
## 5-245473     -2.366323e-02  1.121536e-02
## 5-245497      3.233738e-02  1.430441e-02
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## 5-245509      2.770279e-02 -9.612098e-03

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## 5-245731     -2.942747e-02  1.128613e-03
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## 5-245866     -1.549711e-02  2.950429e-02
## 5-245890     -2.735548e-02  -5.690537e-03
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## 5-245921      3.678178e-03  1.546565e-02
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## 5-246021     -1.919634e-02  1.271694e-02
## 5-246140     -2.655981e-02  -2.691770e-02
## 5-246171     -1.438878e-03  -1.499573e-02
## 5-246195      8.457183e-04  -4.590594e-03
## 5-246198     -6.014338e-03  -2.051391e-02
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## 5-246410     -3.076274e-02  -3.342189e-02
## 5-246413      7.516864e-02  -3.849644e-02
## 5-246551      2.135919e-02  7.157739e-03
## 5-246596      1.920970e-03  -5.229481e-03
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## 5-247016     -9.480093e-03  5.361425e-02
## 5-247025      1.473252e-02  1.170606e-02
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## 5-247333     -1.509990e-02  1.029949e-02
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## 5-248167 -1.339975e-02 -7.692891e-02
## 5-248189 -1.892592e-02 3.700356e-02
## 5-248228 -8.705571e-03 -3.370597e-02
## 5-248233 4.269414e-02 -2.257724e-02
## 5-248270 -3.246000e-02 -5.614088e-03
## 5-248299 4.790023e-03 4.662781e-02
## 5-248384 2.612243e-02 4.986356e-02
## 5-248399 1.469443e-02 1.245010e-02
## 5-248416 -5.404728e-03 -1.065743e-02
## 5-248417 3.255074e-03 2.360490e-03
## 5-248427 -7.385488e-03 1.091348e-03
## 5-248480 1.304052e-02 2.279332e-02
## 5-248513 2.324232e-02 7.632496e-03
## 5-248521 -1.694717e-02 -2.845481e-03
## 5-248534 -5.643518e-03 2.079500e-02
## 5-248548 -1.285039e-02 2.413377e-02
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## 5-248671 -9.092982e-02 -3.137130e-02
## 5-248741 4.884446e-03 -1.082903e-02
## 5-248745 -6.021483e-02 -1.391223e-02
## 5-248785 -1.693761e-03 -3.065029e-02
## 5-248889 -1.694717e-02 -2.845481e-03
## 5-248934 -7.191102e-03 1.427932e-02
## 5-248989 2.536830e-02 -1.101836e-02
## 5-249081 -1.281594e-02 2.429843e-02
## 5-249096 -2.024623e-02 9.822415e-03
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## 5-249105 7.074543e-02 5.757535e-04
## 5-249127 8.837123e-03 1.876604e-02
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## 5-249239 -4.829016e-02 7.513780e-02
## 5-249266 -4.805278e-03 -3.023367e-02
## 5-249295 9.561765e-03 2.208078e-02
## 5-249301 -2.560082e-02 -3.176500e-02
## 5-249346 -2.126439e-02 9.111131e-03
## 5-249467 4.853173e-05 -3.661853e-03
## 5-249492 4.310234e-02 1.674958e-02
## 5-249577 2.780978e-03 8.149943e-03
## 5-249663 -5.112852e-03 -1.283881e-02
## 5-249683 4.550607e-02 1.588417e-02
## 5-249699 2.935307e-02 -1.201575e-02
## 5-249716 2.935307e-02 -1.201575e-02
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## 6-250006 3.860544e-03 -1.623493e-02
## 6-250046 6.165843e-03 -5.730271e-03
## 6-250070 6.059263e-02 1.499056e-02
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## 6-250502     -2.813606e-02 -4.897132e-02
## 6-250528     -3.543052e-04  2.831784e-03
## 6-250587     -2.690810e-02  6.059867e-02
## 6-250644      1.544447e-02  1.997869e-02
## 6-250703      1.204433e-02  3.874811e-06
## 6-250726     -3.079650e-02 -3.214047e-02
## 6-250736     -2.723049e-02 -9.337456e-04
## 6-250761      1.498889e-03 -9.488107e-04
## 6-250884     -1.524707e-02 -9.518873e-03
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## 6-251130     -2.871968e-02  1.748174e-02
## 6-251259      1.031474e-02  5.650793e-03
## 6-251281      5.236536e-02 -8.958260e-03
## 6-251307      1.768506e-02 -6.058644e-04
## 6-251319     -1.294773e-03 -1.074357e-03
## 6-251324     -1.825057e-03 -8.076146e-03
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## 6-251583     -1.012308e-03 -9.852182e-03
## 6-251680      3.654919e-02 -7.555911e-03
## 6-251684     -1.021030e-05 -4.362281e-03
## 6-251792     -2.010671e-02 -2.633826e-02
## 6-251858     -3.982682e-02 -3.759450e-03
## 6-251875      8.100271e-03 -8.903409e-03
## 6-251903     -4.818852e-02 -6.085097e-03
## 6-251953     -9.191043e-03 -6.974108e-03
## 6-251955     -2.745066e-02 -3.948050e-04
## 6-251979      1.880681e-03 -1.617693e-02
## 6-252063      3.243136e-02 -4.989108e-02
## 6-252071      1.101447e-02  5.268459e-03
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## 6-252152     -4.594171e-03  1.040941e-02
## 6-252156     -5.037869e-02 -8.527004e-03
## 6-252170     -2.081435e-02  3.153119e-03
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## 6-252341      1.237635e-03 -3.159822e-03
## 6-252362      9.860015e-03  7.753809e-03
## 6-252375      1.157733e-02  5.379793e-03
## 6-252395      5.236536e-02 -8.958260e-03
## 6-252396      9.179797e-05  5.328696e-03
## 6-252408     -3.107470e-02 -1.285086e-03
## 6-252442     -5.963039e-04 -1.221074e-03
## 6-252579      1.880681e-03 -1.617693e-02
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## 6-252726      -9.918856e-03  -1.303803e-02
## 6-252736      -7.094771e-03  -3.655040e-03
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## 6-253019      7.552148e-03  -7.959026e-03
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## 6-253151      8.099247e-03  5.098398e-03
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## 6-253308      -5.041815e-02  -3.471710e-02
## 6-253403      5.036559e-02  -8.833276e-03
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## 6-253448      -4.097184e-02  -3.685736e-02
## 6-253454      -5.479234e-03  3.337113e-03
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## 6-253463      -1.751234e-02  3.821486e-02
## 6-253473      1.953981e-03  -1.335829e-02
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## 6-253485      1.062545e-02  3.345281e-02
## 6-253554      2.306420e-02  -5.107234e-02
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## 6-254262      -6.497907e-04  -6.540703e-03
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## 6-254438      -1.207326e-02  -4.194023e-02
## 6-254450      -3.031773e-02  -3.999294e-02
## 6-254512      1.757929e-02  6.391285e-02
## 6-254530      -5.277156e-03  3.204624e-03
## 6-254534      1.545228e-02  -2.318717e-03
## 6-254559      2.165176e-03  -1.125716e-01
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## 6-255229 -3.494379e-02 -2.079882e-02
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## 6-255454 -5.274024e-03 1.834161e-03
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## 6-255957 1.887704e-02 -7.468592e-03
## 6-255961 -1.038759e-02 1.859490e-02
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## 6-269058 -9.459107e-03 2.615429e-02
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## 6-269210 2.163427e-02 2.032471e-03

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## 6-269376 1.905916e-03 5.916479e-03
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## 6-269488 4.604057e-03 1.346104e-02
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## 6-270095 3.651527e-02 -1.203901e-02
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## 6-270224 7.802486e-02 -1.106209e-04
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## 6-270323 -2.295884e-02 2.315728e-02
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## 6-270458 -4.827662e-02 -2.479550e-02
## 6-270465 2.128538e-03 7.916674e-03
## 6-270521 4.987926e-03 -3.373790e-03
## 6-270535 -1.978869e-02 -5.307077e-03
## 6-270563 -2.673128e-02 4.702622e-03
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## 6-270798 1.087669e-02 -3.621042e-03
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## 6-273482 1.862677e-03 -8.773942e-03
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## 6-281006     -9.241386e-03   1.903767e-03
## 6-281179      8.974246e-03   3.798957e-03
## 6-281208      4.129757e-03  -4.596812e-03
## 6-281267     -1.398740e-02   5.008195e-03
## 6-281283      4.491689e-02  -1.525238e-02
## 6-281347     -2.708530e-02   1.050132e-02
## 6-281354     -1.588763e-02  -1.721672e-02
## 6-281354_2   -4.506213e-02  -1.353695e-02
## 6-281383     -3.530531e-02  -8.168500e-04
## 6-281388     -7.235014e-03  -1.819182e-03
## 6-281391     -1.149119e-02  -3.486448e-03
## 6-281395      2.152807e-02  -4.494419e-03

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## 6-281499      1.675296e-03  -1.425827e-02
## 6-281550      8.857075e-02  -7.175973e-02
## 6-281579      -1.520636e-05  -9.430944e-03
## 6-281603      1.706125e-02  -5.875546e-03
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## 6-281769      1.500133e-02  -5.373306e-03
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## 6-281835      -2.344023e-02  1.889224e-02
## 6-281839      8.431728e-04  7.974465e-03
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## 6-282156      1.500133e-02  -5.373306e-03
## 6-282184      -3.508779e-03  -9.924079e-03
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## 6-282803      -2.013077e-02  -3.111707e-03
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## 6-283084      1.621620e-03  -3.998934e-03
## 6-283086      8.744449e-02  -6.896258e-02
## 6-283177      3.682425e-02  -2.940558e-02
## 6-283181      -1.272667e-02  -9.879560e-03
## 6-283234      2.318233e-03  1.065562e-02

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## 6-283473     -3.592571e-02  3.556177e-03
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## 6-283628      1.595133e-02  3.559085e-03
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## 6-283772      3.310438e-02  -3.364931e-02
## 6-283803      1.099302e-02  2.582310e-02
## 6-283825     -6.673206e-03  -2.624561e-02
## 6-283887      1.155846e-02  1.094118e-02
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## 6-283947      4.033369e-02  -4.001875e-02
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## 6-285850 -9.602077e-03 2.828314e-02
## 6-285874 -1.308216e-02 2.315372e-02
## 6-285893 4.906442e-02 -2.455989e-02
## 6-285953 -1.012095e-02 -7.705938e-02
## 6-286031 3.903896e-02 1.898317e-02
## 6-286032 -1.414981e-02 1.100035e-02
## 6-286045 3.348871e-03 2.851223e-02
## 6-286097 5.384675e-02 -4.199188e-02
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## 6-286229 3.727785e-02 -3.434880e-03
## 6-286314 2.300072e-02 9.048671e-03
## 6-286319 -8.340510e-03 4.837328e-02
## 6-286409 -2.436791e-02 -5.022891e-04
## 6-286427 -1.436364e-02 -6.214471e-03
## 6-286475 3.457488e-03 7.608745e-03
## 6-286476 2.245544e-02 -1.030931e-02
## 6-286582 8.032210e-02 -5.340474e-04
## 6-286583 -1.847543e-02 2.638786e-03
## 6-286625 1.400202e-03 -2.136519e-02
## 6-286661 1.180990e-02 -5.137184e-03
## 6-286777 -9.862611e-03 1.567241e-02
## 6-286780 1.160781e-02 4.261578e-02
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## 6-286883 4.457877e-02 -3.675122e-02
## 6-286941 1.117613e-02 1.267038e-03
## 6-286987 1.298043e-03 -1.518456e-02
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## 6-287208 1.217998e-02 -6.925354e-03
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## 6-287279 -2.363146e-02 5.261095e-03
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## 6-287421 1.518413e-02 4.915121e-03
## 6-287455 -3.913140e-02 -8.311847e-03
## 6-287490 3.206384e-02 -4.064945e-02
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## 6-287608 -1.940506e-02 -8.947609e-03
## 6-287633 -1.102293e-02 -2.666221e-03
## 6-287666 3.551388e-02 1.113696e-02
## 6-287681 1.642922e-02 4.467816e-02
## 6-287682 -5.137928e-03 -1.216490e-02
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## 6-287774 3.828148e-03 1.168215e-02
## 6-287793 1.412586e-02 2.597213e-02
## 6-287824 4.398717e-02 -3.376596e-02
## 6-287984 -6.181380e-03 3.224387e-02
## 6-288075 -2.232512e-02 -7.627849e-03

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## 6-288126      1.356511e-03 -1.004826e-02
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## 6-288233      1.228920e-03 -7.295935e-03
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## 6-288415     -3.514529e-03  3.127951e-03
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## 6-289106      4.155658e-02  3.196624e-03
## 6-289155      2.092076e-02  4.742558e-02
## 6-289242      5.045140e-02 -3.938020e-02
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## 6-289298     -1.740705e-02  4.873494e-03
## 6-289306     -1.355981e-03  1.753145e-02
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## 6-289327      7.431708e-03 -6.160669e-03
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## 6-289521     -4.371821e-02 -5.524737e-02
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## 6-290404 -5.007807e-03 -9.381512e-03
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## 6-290584 1.274378e-02 3.294088e-02
## 6-290631 -3.579444e-02 1.166185e-02
## 6-290635 5.506533e-03 -3.369076e-03
## 6-290637 -1.330758e-02 3.366980e-02
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## 6-290731 7.171757e-03 6.948314e-03
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## 6-291397 -6.071035e-03 -2.523124e-03
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## 6-292011 5.384832e-02 -3.915959e-04
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## 6-292218 -3.186595e-03 -1.466453e-02
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## 6-292417 5.549988e-02 2.881552e-03
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## 6-293049      -2.254114e-03  -1.299591e-02
## 6-293092      -2.546263e-03  -1.186796e-02
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## 6-294146      -3.399515e-02  -4.203845e-02
## 6-294150      3.359749e-03  -2.104097e-03
## 6-294173      -1.326872e-03  -6.154815e-03
## 6-294193      1.964667e-02  3.537126e-02
## 6-294200      -7.468581e-03  5.621487e-03
## 6-294247      -1.508301e-01  -4.430591e-02
## 6-294249      4.566057e-03  -9.417951e-03
## 6-294252      -4.936583e-03  -2.228140e-02
## 6-294263      2.802903e-03  -1.332839e-02
## 6-294308      -1.223983e-02  -6.402477e-02
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## 6-294492      -1.525086e-02  1.641833e-03

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## 6-294650      -8.212960e-04  -2.451423e-02
## 6-294651      3.919640e-02  -3.003248e-02
## 6-294659      -1.425023e-02  5.695970e-03
## 6-294713      -2.268572e-04  -3.844131e-03
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## 6-294761      -3.928521e-03  -2.179824e-02
## 6-294776      -4.193722e-02  -5.528134e-03
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## 6-294874      3.281379e-03  6.116947e-04
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## 6-295007      -3.925333e-03  -2.103572e-02
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## 7-300900 -5.121458e-03 4.822983e-03
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## 7-301198 7.908962e-03 1.571115e-02
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## 7-301820 1.556316e-02 2.607856e-02
## 7-301849 1.365984e-02 3.001397e-02
## 7-301856 2.869547e-02 -2.923691e-03
## 7-301881 9.323032e-03 1.896642e-02
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## 7-302125 -1.086117e-02 2.595873e-02
## 7-302165 9.436968e-02 -4.381822e-02
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## 7-302213 1.671569e-02 -6.246478e-03
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## 7-302324 8.048295e-03 8.014337e-03
## 7-302327 1.544691e-03 -3.954889e-03
## 7-302340 -9.778243e-03 6.764476e-03

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## 7-305617 1.586338e-02 9.030484e-03
## 7-305621 7.000402e-03 2.420632e-02
## 7-305637 8.614921e-03 9.792630e-04
## 7-305640 -1.616093e-03 5.217743e-03
## 7-305654 3.548475e-02 -4.399156e-02
## 7-305743 1.243644e-02 1.951581e-02
## 7-305839 2.205568e-02 -2.037347e-03
## 7-305873 -2.397784e-02 9.071540e-03
## 7-305926 3.457098e-02 -3.216944e-02

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## 7-305956      3.186995e-03  4.262828e-03
## 7-306033     -1.866556e-02  1.699800e-02
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## 7-306136      2.166137e-02  -1.988000e-03
## 7-306139      2.394943e-04   3.133666e-04
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## 7-306214      5.146266e-02  -3.865636e-02
## 7-306223      9.116867e-03  -1.464014e-03
## 7-306247     -3.455600e-02  -1.621059e-03
## 7-306304     -7.072521e-03  -1.413379e-02
## 7-306312     -3.636469e-03   9.731779e-02
## 7-306377     -2.734304e-03  -2.739047e-02
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## 7-306453      5.924046e-02   2.838318e-02
## 7-306467      2.728915e-03   5.424197e-03
## 7-306514     -7.145506e-03  -3.050287e-02
## 7-306558     -7.072521e-03  -1.413379e-02
## 7-306567     -3.302922e-02  -2.299764e-02
## 7-306717     -1.359484e-02   8.251467e-03
## 7-306766     -1.490858e-02   1.404556e-02
## 7-306786     -1.490858e-02   1.404556e-02
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## 7-306826     -7.548281e-02  -5.810449e-03
## 7-306894     -1.209035e-02  -9.349447e-03
## 7-306921     -2.025803e-02   7.703050e-03
## 7-306959      3.627647e-03   1.605514e-02
## 7-306978      1.906618e-03  -8.227222e-03
## 7-307119     -2.466435e-02  -3.705294e-02
## 7-307146      5.997515e-03  -1.225456e-03
## 7-307172      7.569419e-03   2.259976e-04
## 7-307207      8.879145e-04  -1.375756e-03
## 7-307209      2.185897e-03  -1.464699e-02
## 7-307252      9.876511e-03  -5.122330e-03
## 7-307386      5.623916e-03   9.353645e-03
## 7-307467      6.238785e-03  -9.266924e-04
## 7-307482     -1.244423e-02   2.432998e-03
## 7-307502      1.541019e-02   3.413813e-03
## 7-307506     -6.545445e-04  -5.048529e-03
## 7-307560      2.843183e-02   9.953135e-03
## 7-307570      2.757269e-02   3.275830e-03
## 7-307607      1.322674e-02   2.309629e-03
## 7-307651      2.571547e-03  -2.766837e-02
## 7-307739      2.462854e-03  -1.929536e-03
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## 7-307775      6.868954e-03   4.287875e-04
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## 7-307785     -2.208769e-02  -2.008679e-02
## 7-307826      5.339932e-03   1.496935e-02
## 7-307891     -6.702327e-03   9.619752e-03
## 7-307898     -2.122995e-03  -2.790680e-03
## 7-307908      2.062252e-02   2.531389e-02

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## 7-308120 3.429393e-04 -3.753586e-02
## 7-308124 -1.381156e-02 -4.087276e-02
## 7-308240 3.902009e-02 5.305025e-02
## 7-308304 1.426729e-02 6.007661e-03
## 7-308314 4.961258e-03 1.471520e-02
## 7-308418 1.806069e-03 -2.080466e-03
## 7-308450 1.032085e-02 2.504916e-02
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## 7-308505 1.349799e-02 -5.254499e-03
## 7-308513 7.977097e-03 2.030061e-02
## 7-308524 -1.155154e-02 8.266123e-03
## 7-308546 5.664135e-03 -2.667235e-02
## 7-308549 -3.804126e-02 -3.418554e-02
## 7-308569 1.046315e-03 6.321477e-06
## 7-308680 -8.421897e-03 -2.957016e-03
## 7-308680_2 -2.994963e-02 -4.233066e-03
## 7-308712 3.154185e-03 -2.308515e-02
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## 7-308792 -4.149226e-02 2.037785e-02
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## 7-308830 -1.649566e-02 5.722207e-02
## 7-308840 1.604758e-03 -3.252828e-03
## 7-308846 -1.315972e-02 -1.462614e-02
## 7-308858 8.876750e-03 1.539125e-02
## 7-308874 -1.052183e-02 -3.664152e-03
## 7-308893 -3.706660e-03 -2.023236e-02
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## 7-308949 -1.246402e-02 -5.666373e-02
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## 7-309370 -1.845006e-02 -1.553316e-02
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## 7-309494 -1.688796e-02 5.866555e-02
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## 7-309564 -5.978062e-03 -2.875963e-03
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## 7-309606 -1.203438e-02 2.629164e-02
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## 7-309742 -1.526713e-02 5.260987e-02
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## 7-309872 -2.847193e-02 -2.522342e-03
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## 7-310065 -4.175714e-02 -9.532447e-03
## 7-310077 6.818449e-03 1.228512e-02
## 7-310102 -2.073076e-02 -4.536326e-03
## 7-310108 -1.930275e-03 -2.270450e-02
## 7-310118 2.129630e-03 1.071300e-02
## 7-310148 -4.029424e-02 2.831738e-03
## 7-310164 1.242401e-01 -4.999798e-02
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## 7-310274 -2.127409e-02 -7.328152e-03
## 7-310280 3.206148e-02 -6.258291e-03
## 7-310345 5.506897e-03 -4.682615e-03
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## 7-310380 -1.448936e-02 -4.324207e-02
## 7-310425 -6.330731e-03 -1.440092e-02
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## 7-310464 -1.433724e-02 2.971663e-02
## 7-310500 1.143692e-02 5.017133e-03
## 7-310530 -1.757035e-02 -1.518815e-02
## 7-310536 -2.303939e-02 -5.960076e-03
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## 7-311668 -1.758174e-02 -8.844189e-03
## 7-311745 1.570831e-02 -2.383118e-04
## 7-311758 -3.486867e-02 -8.617193e-03
## 7-311804 1.705099e-02 5.887497e-03
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## 7-311921 -1.051517e-02 3.888050e-02
## 7-312075 3.666012e-02 -2.872867e-02
## 7-312102 -6.946239e-03 7.072789e-03
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## 7-312290      3.666012e-02 -2.872867e-02
## 7-312312      2.204938e-03 -3.575929e-03
## 7-312337     -2.357561e-02 -1.956086e-02
## 7-312492     -2.288328e-02 -5.760941e-02
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## 7-312573      7.065190e-03 -6.423521e-03
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## 7-312712     -1.094736e-02 -1.984084e-03
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## 7-312833      7.661463e-03 -9.241074e-03
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## 7-313077      5.449081e-02  2.466266e-02
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## 7-313115      8.578467e-03  1.225318e-02
## 7-313142      8.578467e-03  1.225318e-02
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## 7-313316      7.987456e-03 -1.998927e-03
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## 7-313433     -1.009471e-02  3.282739e-04
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## 7-313498     -2.545182e-02 -1.732976e-02
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## 7-313729     -3.084363e-02 -5.121854e-03
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## 7-313836      2.009864e-02  4.854822e-04
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## 7-314033      5.019893e-02 -6.618363e-02
## 7-314046      1.817864e-02  8.917762e-03
## 7-314080     -4.547831e-02  1.325074e-01
## 7-314090     -1.018659e-03 -1.332865e-02
## 7-314091      2.483360e-02 -1.740960e-04
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## 7-314360 -5.323622e-02 -2.023406e-02
## 7-314452 -3.254011e-02 -1.076860e-03
## 7-314528 -1.500912e-02  3.707374e-02
## 7-314563  4.601869e-02 -1.610674e-02
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## 7-314740  1.702180e-02  5.251566e-03
## 7-314778  1.717164e-02  2.963925e-02
## 7-314841 -1.566276e-02 -6.460604e-02
## 7-314850 -1.219376e-02 -6.497445e-03
## 7-314914  2.655108e-02  1.395837e-02
## 7-315015 -7.072521e-03 -1.413379e-02
## 7-315017  3.747011e-03 -3.217338e-02
## 7-315061  2.422524e-03 -2.119153e-02
## 7-315161  6.001790e-03  1.231172e-03
## 7-315286  3.659525e-03 -9.303653e-03
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## 7-318081      -3.896285e-02  5.789477e-04
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## 7-318222      7.078197e-02 -2.634136e-02
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## 7-318269      -5.314392e-03 -3.150218e-03
## 7-318293      -2.024996e-02 -2.629433e-02
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## 7-318306      -2.143623e-02  1.226442e-02
## 7-318385      1.221645e-01 -2.974876e-02
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## 7-318720      1.548338e-03 -2.014986e-03
## 7-318803      -2.151238e-02  8.523566e-02
## 7-318828      -5.867398e-03 -5.275655e-03
## 7-318830      1.033837e-04  2.404922e-03
## 7-318880      -2.997177e-02 -3.125638e-02
## 7-318903      3.058064e-02  9.122923e-03

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## 7-318942 -2.358230e-02 -2.191616e-02
## 7-318944 1.645137e-02 5.965196e-02
## 7-318947 -3.562383e-02 -4.115689e-02
## 7-318953 1.610343e-02 2.825600e-03
## 7-318964 2.957910e-03 -1.073029e-02
## 7-319031 -3.049865e-02 8.073143e-03
## 7-319138 1.789467e-02 -7.660018e-03
## 7-319155 1.019973e-02 -8.198160e-03
## 7-319210 -4.886489e-03 -3.906981e-03
## 7-319250 -3.557792e-02 -4.062056e-02
## 7-319253 1.229913e-02 -5.342623e-03
## 7-319255 3.613523e-02 3.483112e-02
## 7-319349 -2.371639e-02 6.975245e-03
## 7-319352 1.940019e-02 3.740404e-04
## 7-319374 3.238230e-03 2.106204e-02
## 7-319383 6.468069e-03 -4.038901e-03
## 7-319399 5.135494e-04 -6.276844e-04
## 7-319429 1.875239e-02 3.984111e-02
## 7-319458 -3.331238e-03 6.017780e-03
## 7-319474 3.237167e-03 -2.722909e-03
## 7-319478 -3.807859e-02 -1.174522e-02
## 7-319512 1.875239e-02 3.984111e-02
## 7-319558 -4.156236e-02 2.386638e-02
## 7-319614 5.720087e-02 -1.795683e-03
## 7-319648 6.748061e-02 -4.676723e-02
## 7-319653 5.720087e-02 -1.795683e-03
## 7-319659 1.107583e-03 -1.849667e-03
## 7-319707 -2.947168e-02 7.050586e-03
## 7-319717 -1.316279e-02 3.970905e-02
## 7-319727 2.330644e-02 -1.706650e-02
## 7-319733 -3.204959e-02 -2.869170e-02
## 7-319815 8.364996e-02 2.843282e-04
## 7-319885 8.578467e-03 1.225318e-02
## 7-319891 -7.859079e-03 -8.750767e-04
## 7-319895 1.812609e-02 4.278379e-02
## 7-319911 -1.057424e-02 -1.939100e-02
## 7-319948 4.311216e-02 -4.790529e-02
## 7-320001 8.578467e-03 1.225318e-02
## 7-320027 -2.019502e-02 -1.641391e-04
## 7-320078 3.253390e-03 8.009759e-03
## 7-320133 3.355139e-02 -2.037354e-02
## 7-320162 -4.270078e-03 5.971876e-03
## 7-320189 5.381525e-03 -4.256271e-03
## 7-320201 -7.072521e-03 -1.413379e-02
## 7-320210 -1.233445e-02 -1.290720e-02
## 7-320210_2 5.584951e-03 1.157675e-03
## 7-320243 4.314166e-03 -1.631822e-04
## 7-320247 -2.803731e-02 3.052575e-02
## 7-320285 4.445042e-02 -4.972436e-02
## 7-320304 7.839317e-03 8.005282e-03
## 7-320305 -3.105021e-02 -3.537172e-02
## 7-320310 -1.492058e-02 -3.107347e-03
## 7-320450 3.015617e-03 -5.380660e-03
## 7-320481 -4.270078e-03 5.971876e-03

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## 7-320526      4.445042e-02 -4.972436e-02
## 7-320538      3.714783e-02 -1.064649e-03
## 7-320542     -9.864132e-03 -1.743616e-02
## 7-320558      2.833690e-03 -2.585374e-02
## 7-320558_2    3.221248e-03 -5.452851e-03
## 7-320582      1.198293e-02 -2.580309e-04
## 7-320624     -5.372155e-03 -3.293921e-02
## 7-320631     -2.904257e-02 -3.347681e-02
## 7-320637     -2.740502e-02 -2.081212e-03
## 7-320665      6.847458e-04 -1.755590e-02
## 7-320717      1.862140e-02  2.503896e-02
## 7-320740      1.159961e-02  5.396639e-03
## 7-320756     -2.957405e-04  8.169632e-03
## 7-320885     -1.753803e-02  2.052735e-03
## 7-320911     -3.177700e-02  2.268948e-03
## 7-320919     -5.299761e-02  4.354718e-02
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## 7-321043     -3.693458e-02  1.540534e-02
## 7-321044      3.799246e-03  8.067806e-03
## 7-321057      3.260866e-03 -6.425020e-03
## 7-321085     -1.210830e-03 -1.039937e-02
## 7-321092      6.847458e-04 -1.755590e-02
## 7-321096      1.100259e-02  2.151515e-02
## 7-321109     -4.827947e-02  1.100034e-02
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## 7-321238      7.439392e-03 -2.481895e-03
## 7-321255      3.194795e-02  8.584879e-03
## 7-321260      9.756421e-04  1.245241e-02
## 7-321285     -2.961521e-02 -3.884011e-02
## 7-321295      8.690356e-02  2.299188e-02
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## 7-321300      1.400120e-02 -3.134711e-03
## 7-321334     -4.150335e-02 -1.008555e-02
## 7-321351     -2.600932e-02  2.441406e-02
## 7-321357      5.276035e-03 -8.676629e-05
## 7-321369     -3.206340e-02 -1.076023e-03
## 7-321391     -2.859721e-02  7.474729e-03
## 7-321420     -1.753803e-02  2.052735e-03
## 7-321452     -2.600932e-02  2.441406e-02
## 7-321466     -2.445178e-02  9.440265e-03
## 7-321517     -1.258489e-02 -4.024111e-02
## 7-321522     -8.974283e-03 -7.330938e-03
## 7-321551     -2.676710e-03 -1.363732e-03
## 7-321571      7.439392e-03 -2.481895e-03
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## 7-321640     -7.072521e-03 -1.413379e-02
## 7-321743     -3.625300e-02 -8.556647e-03
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## 7-321870     -1.144407e-02 -4.098012e-02
## 7-321871      1.191373e-02  5.289437e-03
## 7-321892      7.920283e-03 -1.450831e-02
## 7-321932      8.972222e-03  9.219910e-03
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## 7-322014      1.174236e-02 -3.115819e-03
## 7-322079     -2.230907e-02  4.545789e-03
## 7-322095     -1.952213e-03 -5.536590e-03
## 7-322157      1.634816e-03 -1.003373e-02
## 7-322264      1.187590e-02  6.057113e-03
## 7-322307      6.523965e-03 -1.879622e-02
## 7-322343      5.706903e-02  1.806719e-02
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## 7-322397      8.578467e-03  1.225318e-02
## 7-322406      2.184365e-02  2.015912e-03
## 7-322444     -7.072521e-03 -1.413379e-02
## 7-322444_2   -8.547269e-03  4.000852e-02
## 7-322519     -2.942447e-02 -1.955691e-02
## 7-322655     -1.928260e-02 -1.319087e-02
## 7-322662     -1.928260e-02 -1.319087e-02
## 7-322666     -2.721395e-04 -9.927611e-03
## 7-322674      3.298358e-02 -2.794200e-03
## 7-322723      7.669262e-03  2.134666e-03
## 7-322929     -4.288538e-03  4.990457e-03
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## 7-322973      2.941990e-02 -3.618186e-03
## 7-323058      1.685554e-04 -1.239795e-02
## 7-323086      4.360716e-03  1.725996e-04
## 7-323099      5.053632e-03 -4.545710e-03
## 7-323100      1.176893e-02  1.776207e-03
## 7-323233      1.872596e-03 -5.863246e-03
## 7-323243      8.009233e-02  1.862840e-03
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## 7-323496     -2.399677e-03 -6.256767e-03
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## 7-323675      6.512776e-02  1.206278e-02
## 7-323683     -6.146444e-03 -2.996520e-02
## 7-323714     -2.169929e-02 -7.126302e-04
## 7-323916      1.957439e-03 -4.601196e-03
## 7-323926      6.037370e-03  1.384770e-02
## 7-323958      2.941990e-02 -3.618186e-03
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## 7-324037      4.918136e-04 -8.853367e-03
## 7-324043      6.123921e-03  1.875498e-03
## 7-324066      6.364223e-02 -7.542353e-04
## 7-324150     -1.423637e-02 -9.607966e-03
## 7-324163      4.751212e-03 -3.432360e-03
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## 7-324297      3.496831e-02 -1.352325e-02
## 7-324427      5.271105e-02 -1.288677e-03
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## 7-324467      2.841676e-03 -1.067629e-03

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## 7-324492 -3.699734e-02 -3.177684e-02
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## 7-324557 7.609924e-03 -2.336668e-03
## 7-324604 2.095679e-02 8.331286e-03
## 7-324637 4.723403e-03 -3.653332e-03
## 7-324675 2.121896e-02 1.275444e-03
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## 7-324737 1.071426e-02 2.637308e-03
## 7-324747 -2.397675e-02 1.265415e-03
## 7-324751 1.743614e-02 -2.772710e-02
## 7-324769 -2.397675e-02 1.265415e-03
## 7-324795 -2.162305e-02 7.174291e-02
## 7-324875 1.743614e-02 -2.772710e-02
## 7-324908 1.743614e-02 -2.772710e-02
## 7-324910 3.477761e-03 1.194183e-02
## 7-324944 2.841676e-03 -1.067629e-03
## 7-324953 -2.278238e-02 -3.010197e-02
## 7-324968 3.797140e-03 3.740485e-03
## 7-324968_2 -2.278238e-02 -3.010197e-02
## 7-324972 -3.489203e-03 3.936164e-03
## 7-325105 1.305148e-03 7.492684e-04
## 7-325136 2.607831e-04 -7.063742e-03
## 7-325157 7.207612e-03 1.789560e-03
## 7-325201 1.837902e-03 1.810385e-02
## 7-325239 -5.422064e-02 -1.157891e-02
## 7-325249 -4.581914e-02 -2.717189e-02
## 7-325255 1.691343e-03 1.058261e-02
## 7-325286 3.868959e-03 -3.331222e-03
## 7-325336 -1.643515e-02 6.132187e-02
## 7-325404 4.981510e-03 4.436553e-03
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## 7-325539 -3.314567e-02 -8.742365e-03
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## 7-325679 3.529338e-04 -5.891402e-03
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## 7-325736 -2.162305e-02 7.174291e-02
## 7-325752 4.500040e-03 5.651511e-04
## 7-325882 9.901354e-03 2.370762e-02
## 7-325883 -1.820570e-02 1.457279e-02
## 7-325981 1.151248e-01 -4.779506e-02
## 7-326151 3.198772e-03 8.367917e-02
## 7-326239 -1.534837e-02 5.775279e-02
## 7-326286 1.508799e-02 3.677626e-02
## 7-326288 -1.113480e-02 -4.018330e-02
## 7-326299 -2.890187e-02 -6.381735e-03
## 7-326332 -5.476568e-02 -2.235336e-02
## 7-326332_2 -1.534837e-02 5.775279e-02
## 7-326422 2.309944e-02 7.663963e-03
## 7-326473 -2.037497e-02 1.169366e-02
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## 7-326637    2.774615e-03  4.932007e-03
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## 7-326700   -7.311276e-03  -1.445215e-02
## 7-326712    1.626531e-02  -3.355459e-03
## 7-326726   -1.705181e-02  -2.530719e-02
## 7-326729   -1.916901e-02  1.528793e-02
## 7-326746    2.774615e-03  4.932007e-03
## 7-326746_2  -2.885886e-02  5.959564e-03
## 7-326817    1.326989e-02  1.553637e-03
## 7-326851   -2.121626e-02  1.726065e-02
## 7-326907    1.050108e-01  -2.382665e-02
## 7-326940   -2.019755e-03  8.381231e-03
## 7-327073   -7.311276e-03  -1.445215e-02
## 7-327098   -1.552669e-02  1.065088e-02
## 7-327109   -1.643515e-02  6.132187e-02
## 7-327138    3.562505e-03  -4.266640e-03
## 7-327186   -2.089893e-02  7.955948e-03
## 7-327260    3.334768e-02  3.059132e-02
## 7-327329   -4.717193e-02  -6.335976e-02
## 7-327334    6.129511e-04  -5.987427e-03
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## 7-327381    9.727911e-03  -8.978800e-03
## 7-327439   -2.376541e-02  9.823784e-03
## 7-327499    8.464524e-03  3.225253e-03
## 7-327522   -4.802202e-03  2.782958e-03
## 7-327557    1.501219e-02  3.626281e-03
## 7-327565    1.501219e-02  3.626281e-03
## 7-327588    4.417452e-02  3.354460e-02
## 7-327616    7.795793e-03  -6.447517e-03
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## 7-327661   -4.713523e-03  3.849203e-02
## 7-327698   -2.162305e-02  7.174291e-02
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## 7-327842    2.036601e-02  2.457731e-03
## 7-327864   -1.105215e-02  -3.691049e-03
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## 7-327960    1.758071e-04  -1.908278e-03
## 7-327961   -4.226104e-03  -2.780369e-03
## 7-328043    9.121349e-03  -9.555029e-03
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## 7-328105    1.964258e-03  1.470052e-02
## 7-328160   -3.520413e-03  2.996334e-03
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## 7-328229   -5.702754e-03  -1.945250e-02
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## 7-328638     -2.789769e-02  -6.641376e-04
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## 7-328659     -2.368993e-02   9.937958e-03
## 7-328673      2.977536e-03   1.540609e-02
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## 7-328677     -6.393233e-04  -9.313827e-03
## 7-328880     -4.804090e-04  -4.864226e-03
## 7-328904     -6.393233e-04  -9.313827e-03
## 7-328920      5.129659e-03  -2.279943e-02
## 7-328929     -1.768558e-02  -1.614845e-02
## 7-328946     -4.338655e-02  -8.811336e-03
## 7-328975      7.801918e-02   2.066610e-03
## 7-328983      9.637201e-03  -7.899511e-03
## 7-329015      4.692875e-03   1.061627e-02
## 7-329025      5.693579e-03   1.622319e-03
## 7-329035      6.526725e-03   1.610069e-03
## 7-329035_2    1.632471e-03   1.650596e-03
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## 7-329054     -4.156839e-03  -1.450686e-02
## 7-329113     -2.399705e-02  -3.007593e-02
## 7-329150      1.362697e-02   6.737078e-03
## 7-329182     -4.733103e-02  -5.295002e-02
## 7-329188      5.704625e-02  -4.229162e-02
## 7-329203      2.351665e-02  -7.947370e-03
## 7-329230     -2.213745e-02  -2.493621e-02
## 7-329303     -2.536548e-03   1.656200e-02
## 7-329306      3.697941e-02  -1.450880e-02
## 7-329313     -1.322507e-02  1.198267e-02
## 7-329332      1.508116e-02   3.891356e-03
## 7-329455     -3.273259e-03   6.188798e-03
## 7-329456      1.283345e-02   4.834773e-03
## 7-329508     -1.111257e-02  2.064824e-03
## 7-329547     -3.398844e-02  -3.554144e-02
## 7-329592      1.120844e-03  -5.120547e-03
## 7-329613      1.865314e-02   4.890563e-03
## 7-329614     -1.888419e-03   7.810282e-03
## 7-329701     -9.581317e-03  1.312031e-02
## 7-329724      3.819788e-03   8.305910e-03
## 7-329744     -1.299217e-02  -4.898458e-03
## 7-329792     -2.218248e-02   7.369600e-02
## 7-329842     -3.486264e-02  -3.686973e-02
## 7-329887      4.454701e-02   7.188957e-03
## 7-329925      6.196464e-03  -1.430707e-03
## 7-329937     -1.748249e-02   1.303586e-02
## 7-329976      1.031761e-02   2.296486e-02
## 7-329996      1.480843e-02   7.180536e-02
## 7-330051      9.390876e-03   2.952189e-02
## 7-330125     -1.687664e-03  -5.804361e-03
## 7-330126     -1.912943e-03   3.690669e-02

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## 7-330152      4.160545e-02  4.287806e-03
## 7-330174      1.031761e-02  2.296486e-02
## 7-330179     -1.242160e-02  -9.051624e-03
## 7-330189     -1.748249e-02   1.303586e-02
## 7-330200      4.548322e-02  -1.701299e-02
## 7-330259     -1.242160e-02  -9.051624e-03
## 7-330278     -2.080966e-03   3.308413e-03
## 7-330287      1.929046e-02  -3.556002e-03
## 7-330426     -3.449587e-02  -3.673986e-02
## 7-330440      4.153681e-03  -1.592872e-03
## 7-330522     -5.301979e-02   1.161105e-01
## 7-330561      4.580293e-02  -1.817851e-02
## 7-330592     -3.058837e-02  -9.893913e-03
## 7-330610      2.970255e-02  1.075070e-01
## 7-330709     -8.378864e-03   2.034577e-02
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## 7-330788      4.556760e-02  -1.744407e-02
## 7-330863     -4.318963e-03   9.397891e-04
## 7-330874      4.751981e-02  8.318043e-03
## 7-330877     -3.248608e-03   4.370612e-03
## 7-330892      2.030832e-03  2.905043e-02
## 7-330893      4.778134e-02  9.150422e-03
## 7-330960     -3.000217e-02  -3.269632e-02
## 7-330991     -1.946509e-02  -4.471012e-03
## 7-331048     -2.905847e-02  -3.170087e-02
## 7-331064     -1.768369e-02  -2.266684e-03
## 7-331093     -1.613746e-02  1.349012e-02
## 7-331133      1.183356e-02  3.049437e-02
## 7-331232      6.423906e-03  2.020338e-02
## 7-331254     -1.397382e-02  -5.121766e-02
## 7-331307     -1.325117e-01  4.359899e-02
## 7-331330      3.000735e-02  -2.259346e-03
## 7-331367     -6.501802e-03  -3.584264e-03
## 7-331438      4.738697e-02  -3.935505e-02
## 7-331454      1.911340e-02  6.726636e-03
## 7-331456      3.678476e-02  -2.113470e-02
## 7-331540      2.892592e-02  -6.126586e-03
## 7-331545      3.947509e-02  -1.393615e-02
## 7-331611      3.774175e-03  1.513161e-02
## 7-331654     -1.926942e-02  -1.785346e-02
## 7-331662      1.220425e-02  -1.249904e-03
## 7-331726     -1.701788e-02  9.050487e-03
## 7-331747      1.634298e-02  6.214832e-03
## 7-331757     -3.187833e-02  -3.947961e-02
## 7-331920      1.658194e-02  4.952565e-03
## 7-331967     -6.785697e-03  1.888542e-02
## 7-332025     -1.412614e-02  -5.086767e-02
## 7-332073     -1.298098e-02  -1.312990e-02
## 7-332164     -9.727063e-03  -3.741955e-02
## 7-332255     -5.467121e-02  -1.746490e-02
## 7-332322     -1.571721e-02  6.486889e-04
## 7-332327     -2.915544e-02  -3.617685e-02
## 7-332384      3.813654e-02  -6.024853e-02
## 7-332511     -9.444899e-03  -3.695495e-02

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## 7-332516 -8.051628e-03 9.346071e-03
## 7-332546 1.144291e-03 -3.827191e-03
## 7-332556 1.907535e-02 3.814988e-02
## 7-332612 -2.421474e-02 8.043877e-02
## 7-332613 -1.924171e-02 1.818343e-05
## 7-332691 -1.202927e-02 -2.313533e-03
## 7-332714 3.780556e-03 -4.875891e-03
## 7-332744 1.825113e-02 5.452579e-03
## 7-332780 -5.992413e-02 -4.054324e-02
## 7-332799 -5.798144e-02 -4.248207e-02
## 7-332819 -7.317798e-03 -3.131238e-02
## 7-332834 8.364996e-02 2.843282e-04
## 7-332840 2.270959e-02 7.337035e-03
## 7-332916 1.405053e-02 4.108859e-03
## 7-332922 6.745414e-03 -2.543145e-02
## 7-332937 1.957439e-03 -4.601196e-03
## 7-332940 -7.334607e-03 2.773613e-03
## 7-332947 -1.742924e-02 -2.144557e-02
## 7-332984 -1.138256e-03 -1.347981e-02
## 7-333005 1.454440e-02 -3.244724e-02
## 7-333057 -1.742924e-02 -2.144557e-02
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## 7-333558 6.278944e-03 2.856006e-02
## 7-333597 -6.590701e-03 -1.320217e-02
## 7-333602 6.862355e-03 -9.633175e-03
## 7-333665 -3.191060e-02 1.716815e-02
## 7-333704 -1.912644e-02 -1.864813e-02
## 7-333726 6.975226e-03 -2.290741e-03
## 7-333741 -2.963874e-02 -1.134906e-02
## 7-333779 -3.722970e-02 3.489457e-02
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## 7-333858 1.471026e-02 4.033873e-03
## 7-333877 -5.387635e-02 -1.935515e-02
## 7-333882 1.588839e-02 -1.441998e-02
## 7-333910 -6.529685e-03 1.790519e-02
## 7-334021 8.787437e-02 -3.281346e-02
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## 7-334063 -1.403993e-02 -2.456292e-03
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## 7-334148 -2.886809e-02 1.617483e-02
## 7-334157 3.197476e-03 -5.034845e-03
## 7-334215 -2.528848e-02 -3.348501e-02
## 7-334234 -1.912644e-02 -1.864813e-02
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## 7-334283 -3.833157e-02 -2.615398e-02
## 7-334301 2.092916e-02 6.127244e-03
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## 7-334382 1.659472e-02 4.123107e-03
## 7-334566 -3.984424e-03 2.750478e-03
## 7-334568 3.202868e-03 -3.794822e-03
## 7-334777 -1.143409e-02 4.826834e-02
## 7-334980 -8.660635e-03 1.961229e-02
## 7-335003 -1.615472e-02 1.264211e-02
## 7-335012 1.055301e-03 1.893790e-02
## 7-335013 1.150301e-02 -8.336399e-03
## 7-335013_2 -1.143409e-02 4.826834e-02
## 7-335054 -2.707951e-02 1.564644e-02
## 7-335063 3.749174e-02 7.373304e-03
## 7-335084 6.742762e-03 -1.034609e-02
## 7-335084_2 5.831563e-03 1.739280e-02
## 7-335127 -1.987370e-02 1.026718e-02
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## 7-335152 -3.379827e-04 3.780671e-02
## 7-335196 -1.595343e-02 -1.250356e-02
## 7-335233 1.667202e-02 4.409160e-03
## 7-335249 -1.952909e-03 -1.080184e-04
## 7-335313 8.158844e-02 -6.688503e-02
## 7-335345 -1.143409e-02 4.826834e-02
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## 7-335472 -7.273118e-03 7.024719e-03
## 7-335511 1.645292e-02 4.403110e-03
## 7-335512 -1.261686e-02 -4.699348e-02
## 7-335584 -7.327809e-03 -1.517845e-02
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## 7-335997 -3.004010e-02 -2.003344e-03
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## 7-336172 -1.403022e-02 8.470761e-03
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## 7-336395 -3.121944e-02 -2.642542e-02
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## 7-336650 5.012467e-03 -8.137637e-03
## 7-336682 -3.472849e-02 -6.371622e-03
## 7-336694 1.555540e-02 7.076112e-03
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## 7-336826 1.224575e-01 -3.717270e-02

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## 7-337085      1.821779e-04  3.638517e-02
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## 7-337095      -4.313657e-02  -4.260432e-02
## 7-337144      2.339286e-02  -5.098584e-03
## 7-337155      2.419580e-02  -1.777094e-03
## 7-337174      5.292794e-03  -7.637245e-03
## 7-337185      -3.711286e-02  5.443987e-03
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## 7-337424      4.971801e-03  1.616357e-03
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## 7-337493      3.520008e-02  -1.563943e-02
## 7-337498      -6.164294e-04  1.107078e-02
## 7-337507      -2.524484e-02  -4.746273e-03
## 7-337520      -2.220585e-02  -9.274474e-04
## 7-337520_2    6.098335e-03  2.019174e-02
## 7-337586      9.948547e-02  -2.141402e-02
## 7-337627      3.473546e-02  6.486522e-02
## 7-337690      -3.395626e-02  5.017761e-03
## 7-337756      -2.678572e-02  -4.260381e-03
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## 7-337868      -2.636679e-02  -9.993967e-03
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## 7-337903      -7.327809e-03  -1.517845e-02
## 7-337985      2.417322e-03  7.054061e-03
## 7-338022      6.059479e-05  -3.878524e-03
## 7-338030      -3.968057e-03  1.858651e-02
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## 7-338320      -2.997131e-02  -9.719034e-03
## 7-338336      1.023812e-03  -6.172726e-03
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## 7-338496      -9.533080e-03  8.843975e-03
## 7-338562      -1.335790e-02  2.895769e-02
## 7-338570      -1.536957e-02  3.673680e-02
## 7-338587      -7.327809e-03  -1.517845e-02
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## 7-338735      -1.827338e-02  1.917478e-02
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## 7-338859      1.046682e-02  1.450245e-02
## 7-338937      -1.225956e-03  2.084279e-02
## 7-338950      1.853554e-02  3.868948e-03
## 7-338975      -1.605823e-02  4.905034e-03
## 7-338995      1.957439e-03  -4.601196e-03

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## 7-339152      -4.327087e-04   1.724688e-02
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## 7-339238      -5.465347e-02  -5.801117e-02
## 7-339242       4.871751e-02  -2.285672e-02
## 7-339394       7.842094e-03   2.154279e-03
## 7-339402      -6.320044e-04   1.747892e-02
## 7-339404      -1.093008e-02   5.218795e-02
## 7-339430       8.973173e-04  -5.078969e-03
## 7-339438       1.349020e-03  -2.866414e-03
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## 7-339564      -4.352817e-03   7.696082e-04
## 7-339588       1.215106e-02   2.570041e-02
## 7-339588_2    -1.730273e-02   4.115515e-02
## 7-339623      -1.075373e-01  -1.365433e-02
## 7-339634       1.363593e-03   2.224623e-03
## 7-339678      -6.021274e-02  -2.733109e-02
## 7-339714       1.903790e-02   7.274384e-04
## 7-339771       3.051920e-02   7.849456e-03
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## 7-339939       6.700683e-02   2.768033e-02
## 7-339950      -6.969662e-04   2.624071e-02
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## 7-340402      -5.438904e-03  -1.107072e-02
## 7-340408      -1.124835e-03   2.891950e-02
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## 7-340587       6.260945e-02   1.459433e-02
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## 7-340722       1.437713e-02   7.133224e-03
## 7-340762       8.373725e-03   9.514639e-03
## 7-340865      -9.998770e-03  -1.574585e-03
## 7-340866      -9.998770e-03  -1.574585e-03
## 7-340889      -2.106987e-02  -6.489388e-03
## 7-340926       9.781573e-03   1.365196e-02
## 7-340977       2.270905e-03  -1.198363e-02
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## 7-341912     -1.741199e-02  2.309987e-02
## 7-341948     -1.972063e-02  2.577262e-02
## 7-341980     -1.741199e-02  2.309987e-02
## 7-342136     -1.533730e-02 -4.424638e-03
## 7-342152      2.464172e-02  1.002045e-02
## 7-342190     -1.188215e-02 -1.289356e-02
## 7-342234      1.349000e-02  3.135158e-02
## 7-342256     -1.317587e-01 -7.411687e-02
## 7-342281     -2.712955e-02  1.483867e-02
## 7-342292     -3.172107e-02  2.201481e-02
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## 7-342303      4.781851e-03 -6.802966e-03
## 7-342324     -1.031616e-02 -1.314447e-02
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## 7-342413      7.912262e-03  3.188007e-03
## 7-342463      1.981984e-02  1.138514e-02
## 7-342522     -6.575933e-03  1.701332e-02
## 7-342527      2.935097e-02  7.104820e-03
## 7-342554     -1.919088e-02 -1.698979e-02
## 7-342607     -1.293834e-02 -5.317493e-02
## 7-342720      1.406388e-02  4.375481e-03
## 7-342724     -1.445057e-02 -3.875556e-03
## 7-342753     -2.841708e-02 -3.132111e-02
## 7-342774     -2.841708e-02 -3.132111e-02
## 7-342802     -1.117833e-02  1.217545e-02
## 7-342822     -2.841708e-02 -3.132111e-02
## 7-342832      4.167000e-03 -1.952807e-02
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## 7-343242      8.686973e-03 -1.476527e-04
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## 7-343303      1.716398e-03 -8.763690e-03
## 7-343322     -7.327809e-03 -1.517845e-02
## 7-343327      8.686973e-03 -1.476527e-04
## 7-343354      1.444478e-02  5.331556e-03
## 7-343409     -8.967468e-03 -5.181120e-02
## 7-343622     -1.753048e-02  1.810326e-02

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## 7-344091      4.833017e-02 -2.045823e-02
## 7-344095     -4.167379e-02 -9.508258e-03
## 7-344106     -3.019546e-02  3.113627e-04
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## 7-344170     -8.491295e-02  1.392755e-02
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## 7-344972      4.215468e-02  1.115233e-02
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## 7-345191     -9.129916e-02 -8.389852e-02
## 7-345209      2.951438e-03  9.236919e-03
## 7-345244     -6.987788e-03 -2.929770e-02
## 7-345286      1.675868e-03  2.017128e-02
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## 7-345480     -3.930423e-02 -2.208110e-02
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## 7-345516     -1.077262e-02  1.716897e-02
## 7-345539      5.307429e-02 -7.929352e-03
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## 7-346818 -3.701641e-03 1.296899e-02
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## 7-348252      -5.827611e-02 -6.733310e-02
## 7-348318      -3.291559e-02 -1.203817e-02
## 7-348375      -4.619153e-03 -2.693959e-03
## 7-348451      5.379114e-03  -6.765234e-03
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## 7-348569      -4.964906e-02 -2.078972e-02
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## 7-348639      1.024033e-02 -2.574427e-03
## 7-348698      2.207212e-02 -1.297573e-02
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## 7-348813      1.176789e-02  2.851998e-02
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## 8-350845 -2.544505e-03 -2.894983e-02
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## 8-351486 2.241403e-02 2.197928e-02
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## 8-352566 -3.898966e-02 -2.260314e-02
## 8-352614 -4.427363e-02 -1.860680e-03
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## 8-352862 9.483697e-03 8.304065e-03
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## 8-352890 1.104143e-02 -1.618541e-04
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## 8-356065 2.015866e-02 5.498340e-03
## 8-356099 -3.570609e-03 -7.298377e-03
## 8-356104 1.221605e-02 1.671800e-02
## 8-356110 -3.844578e-02 1.734416e-03

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## 8-357574      4.660679e-04  2.563720e-04
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## 8-358083     -3.025801e-02 -2.692951e-02

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## 8-358188 -9.962488e-03 -5.384182e-03
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## 8-358419 7.901308e-03 8.889286e-04
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## 8-359594 -2.234488e-03 3.172355e-02
## 8-359613 1.479475e-02 1.733725e-03
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## 8-359806     -1.980380e-02  1.986777e-02
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## 8-367811     -2.905475e-02   9.922786e-02
## 8-367839      1.186443e-05   3.651075e-03
## 8-367859     -4.583271e-03  -3.546702e-03
## 8-367948      1.321801e-02   1.023049e-02

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## 8-367961 -8.048673e-03 -4.297354e-03
## 8-367986 -5.207686e-03 -5.295496e-03
## 8-367995 -2.225585e-02 -1.501618e-02
## 8-368032 1.774950e-02 6.372921e-03
## 8-368033 2.871301e-03 -5.663108e-03
## 8-368042 -3.066305e-02 -1.493471e-02
## 8-368078 -3.336761e-03 3.587247e-04
## 8-368167 1.027977e-02 -7.310962e-03
## 8-368243 1.085685e-02 2.797123e-02
## 8-368263 8.912822e-03 6.155981e-03
## 8-368274 -2.387238e-02 -1.709746e-02
## 8-368300 -1.273153e-03 -8.924365e-03
## 8-368309 4.651117e-02 -3.215068e-02
## 8-368333 -2.277472e-02 -1.088116e-02
## 8-368413 9.678980e-03 -2.588808e-03
## 8-368509 -3.587259e-02 -6.392389e-03
## 8-368532 -3.201791e-02 8.785787e-02
## 8-368577 -2.211662e-02 1.996369e-02
## 8-368583 5.163349e-03 6.512240e-03
## 8-368617 -3.074476e-02 9.678223e-02
## 8-368650 -8.387824e-03 1.269095e-03
## 8-368744 -1.028509e-02 -1.555321e-03
## 8-368750 3.408091e-03 3.402322e-03
## 8-368763 -2.352169e-03 -8.103366e-03
## 8-368803 -6.891700e-03 -3.377045e-03
## 8-368869 8.059766e-03 1.036791e-03
## 8-368897 -1.028509e-02 -1.555321e-03
## 8-368919 -2.449607e-03 -6.984987e-03
## 8-368919_2 -8.282264e-03 9.409164e-03
## 8-369049 7.563194e-03 -3.822218e-03
## 8-369115 7.752695e-02 9.077710e-03
## 8-369115_2 -6.544511e-03 -1.232950e-02
## 8-369122 2.022978e-02 4.015395e-02
## 8-369129 -9.441390e-04 1.044441e-02
## 8-369130 8.636592e-03 5.489653e-03
## 8-369141 -7.946884e-03 -4.936823e-03
## 8-369320 7.064430e-03 1.291782e-03
## 8-369402 7.500743e-03 6.649762e-04
## 8-369427 -1.323661e-02 -4.848822e-03
## 8-369481 2.512066e-02 9.778163e-03
## 8-369497 1.916689e-03 -6.035217e-03
## 8-369553 4.199370e-03 1.848304e-02
## 8-369602 -1.370225e-02 1.745297e-02
## 8-369673 -1.300000e-02 -4.708480e-03
## 8-369685 -7.262853e-03 -1.545841e-02
## 8-369693 2.861787e-03 5.523232e-03
## 8-369721 -1.686766e-02 2.564902e-02
## 8-369740 8.537049e-03 -1.700840e-03
## 8-369778 2.173182e-02 5.526875e-03
## 8-369781 -2.736638e-02 -1.037549e-02
## 8-369792 -8.648595e-03 -1.420673e-02
## 8-369806 2.355460e-03 -8.740685e-03
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## 8-370023    -1.259692e-02  5.739800e-03
## 8-370042    1.689300e-02   4.190840e-03
## 8-370065    1.179516e-02   2.356851e-02
## 8-370068    1.185342e-03   2.892681e-03
## 8-370124    -1.200843e-03  3.291998e-03
## 8-370150    -7.311766e-03  -9.074928e-03
## 8-370151    -7.311766e-03  -9.074928e-03
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## 8-370317    2.493642e-03   1.161049e-02
## 8-370331    -2.778695e-02  -6.850345e-03
## 8-370355    4.542344e-03   -1.120924e-02
## 8-370358    2.423244e-02   4.062723e-02
## 8-370360    9.592167e-04   -3.750275e-03
## 8-370369    3.915968e-03   1.418668e-02
## 8-370392    -8.438897e-04  1.994523e-03
## 8-370441    3.915968e-03   1.418668e-02
## 8-370487    2.493642e-03   1.161049e-02
## 8-370592    6.162018e-03   1.255310e-02
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## 8-370843    1.472369e-03   3.479849e-03
## 8-371077    1.014503e-02   2.029588e-03
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## 8-371190    7.570831e-03   2.997982e-03
## 8-371246    1.268804e-02   6.406845e-03
## 8-371305    3.274142e-04   -5.076680e-03
## 8-371307    1.752902e-03   2.943395e-02
## 8-371448    -2.264340e-02  1.845942e-02
## 8-371461    -1.578116e-02  -1.272506e-02
## 8-371479    2.339081e-03   -4.776829e-03
## 8-371484    1.691332e-02   4.072454e-02
## 8-371502    -1.355640e-03  1.840919e-02
## 8-371531    2.610536e-03   -1.550918e-03
## 8-371593    2.528307e-02   -7.605023e-04
## 8-371609    2.610536e-03   -1.550918e-03
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## 8-371789    7.549028e-03   -8.024250e-04
## 8-371839    8.555878e-03   -9.990900e-04
## 8-371868    7.102041e-04   1.861810e-03
## 8-371877    -1.169020e-03  1.834460e-02
## 8-371892    -2.167226e-03  -2.342756e-03
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## 8-372323    1.476888e-02   4.808450e-03
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## 8-372396    -1.079951e-02  -3.308610e-02
## 8-372427    -1.408223e-02  -4.096185e-02
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## 8-372699      6.373087e-03 -5.579392e-03
## 8-372719      3.075563e-03  1.112051e-02
## 8-372725     -1.792427e-02 -1.216821e-02
## 8-372870     -9.429613e-04 -7.623349e-04
## 8-372921     -2.249869e-02 -1.171236e-03
## 8-372980     -6.899612e-03  1.583318e-02
## 8-372983     -3.782547e-03 -4.805168e-03
## 8-373060     -2.136684e-02 -5.073197e-03
## 8-373068     -3.403229e-02 -2.948793e-03
## 8-373078     -1.901478e-02 -3.802242e-03
## 8-373126      1.037921e-02  3.879709e-03
## 8-373130      1.370742e-02 -9.638518e-02
## 8-373168     -1.103303e-02 -3.608933e-02
## 8-373265      6.140865e-04 -1.120713e-02
## 8-373280      3.420675e-02 -1.266940e-02
## 8-373366     -3.225120e-02 -3.542644e-03
## 8-373387      3.104276e-03  1.236142e-02
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## 8-373435      3.372933e-03  9.556530e-03
## 8-373437      1.036040e-02 -4.271062e-03
## 8-373456     -1.086451e-02  2.624451e-02
## 8-373468     -3.201545e-02 -1.224591e-02
## 8-373479     -6.758062e-03 -2.698490e-03
## 8-373541     -1.433202e-03  1.654937e-03
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## 8-373597      1.036742e-02  1.200928e-02
## 8-373651      1.086594e-02 -4.082262e-03
## 8-373761      2.521497e-02  4.883012e-02
## 8-373795      3.211717e-03 -3.965434e-02
## 8-373874      3.339885e-02 -1.089383e-02
## 8-373878     -5.277241e-02 -6.559992e-02
## 8-373948      3.817622e-02 -1.327922e-02
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## 8-374092      4.608117e-02 -1.671243e-02
## 8-374096     -9.498164e-03  2.308052e-02
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## 8-374266     -1.401084e-02 -5.292080e-02
## 8-374279     -3.059450e-03 -7.891757e-03
## 8-374357      4.729087e-02 -6.247760e-04
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## 8-374432      3.339885e-02 -1.089383e-02
## 8-374458     -4.428778e-03 -1.417801e-02
## 8-374555      1.260781e-02  3.224217e-02
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## 8-374613 -2.892779e-02 1.200297e-02
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## 8-374747 6.092653e-03 1.862087e-03
## 8-374801 -3.492615e-02 -1.109487e-02
## 8-374807 -4.918448e-02 -6.411387e-02
## 8-374900 5.407404e-02 -3.066735e-02
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## 8-374955 1.442647e-02 3.087511e-03
## 8-375101 1.074983e-03 4.598579e-03
## 8-375112 -7.898439e-03 -1.085199e-02
## 8-375219 5.855519e-04 4.806310e-03
## 8-375228 -2.363170e-02 5.685734e-02
## 8-375230 4.604110e-02 -1.605380e-02
## 8-375241 4.740656e-03 1.903092e-02
## 8-375258 4.778862e-03 -1.392934e-03
## 8-375265 -3.085701e-03 -1.028206e-02
## 8-375275 4.778862e-03 -1.392934e-03
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## 8-375286 -3.334837e-02 -5.302414e-02
## 8-375293 4.043932e-02 -3.697526e-02
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## 8-375532 -8.897857e-03 5.973510e-02
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## 8-376279 -1.443738e-02 2.326374e-02
## 8-376302 -2.466491e-02 -4.349714e-03
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## 8-379838 -1.041202e-02 8.532882e-03
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## 8-379947 7.474441e-03 -3.872346e-03
## 8-379949 -7.250345e-03 -8.149931e-02
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## 8-380061 -2.699596e-03 2.933273e-02
## 8-380075 -6.406694e-02 -1.136604e-02
## 8-380088 -3.303877e-02 -1.206127e-01
## 8-380098 -4.780952e-02 -6.512816e-02
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## 8-380261 -1.111371e-02 7.142714e-03
## 8-380311 1.193192e-02 5.629258e-03
## 8-380348 -2.003359e-02 3.207349e-02
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## 8-380518 -7.520368e-03 -1.816760e-03

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## 8-394200 -1.631246e-02 1.614087e-02
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## 8-394363 -1.551574e-02 -1.837829e-03
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## 8-396042 1.166520e-02 2.623293e-02
## 8-396141 2.128106e-02 -1.197293e-02
## 8-396234 1.244916e-02 -3.726753e-05
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## 8-396371 2.748913e-03 -3.682688e-03
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## 8-396446 5.937419e-03 2.114684e-02
## 8-396453 -1.558635e-02 6.453550e-03
## 8-396529 -2.380544e-02 -2.622291e-02
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## 8-396807      -2.781404e-03 -1.652180e-02
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## 8-398623      1.630977e-02  1.364088e-02
## 8-398678      -1.208483e-02  2.643025e-03
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## 9-401335 1.369296e-03 8.551563e-03
## 9-401483 1.719300e-03 -4.702801e-04
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## 9-402324 2.715593e-02 -7.811077e-02
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## 9-403260 -1.712895e-02 1.088058e-01
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## 9-420689      4.533684e-03  2.505290e-03
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## 9-420740      7.116737e-03 -7.220726e-03
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## 9-421147      7.312312e-03  6.9233335e-03
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## 9-421167      -1.807536e-02 -5.553066e-03
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## 9-421357      -1.560696e-02 -5.254457e-03
## 9-421404      -2.550531e-02 -6.613892e-03
## 9-421420      7.244430e-03  6.445817e-03
## 9-421466      6.183697e-04 -4.205191e-03
## 9-421476      9.974416e-03  2.575036e-02
## 9-421491      -2.948501e-02 -2.840385e-02
## 9-421498      -3.433013e-02  9.452835e-02
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## 9-421515      -7.635540e-03 -1.596155e-02
## 9-421560      4.332804e-02 -5.840924e-03
## 9-421563      1.326478e-02 -4.638917e-03
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## 9-422019      -2.166310e-02  -2.422853e-02
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## 9-423935 3.198261e-02 -2.663351e-02
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## 9-425446 -1.442450e-02 6.762580e-06
## 9-425488 4.164142e-02 -3.362477e-02
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## 9-425826     -1.033658e-02  2.521809e-02
## 9-425840      6.936570e-03  2.098563e-02
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## 9-425942     -2.704912e-02 -4.645163e-03
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## 9-426265     -1.688343e-04 -5.004830e-04
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## 9-426738     -1.430927e-02  4.861169e-02
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## 9-428771 1.186378e-02 -2.766052e-03
## 9-428807 1.988807e-03 -2.028558e-03
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## 9-429180 6.899245e-03 -2.191618e-02
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## 9-429275 3.651780e-02 6.163331e-02
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## 9-430179      -2.651478e-02  3.614480e-04
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## 9-443883      1.092531e-02  3.088795e-02
## 9-443943     -2.518840e-02  -2.115242e-02
## 9-443990      2.226142e-03  -3.698626e-03
## 9-444006     -2.341617e-02  -1.286723e-02
## 9-444100     -1.698520e-02  -2.421766e-02
## 9-444105      1.361504e-02  4.431023e-03
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## 9-444115     -8.162342e-03  -1.472120e-02
## 9-444132     -2.617726e-02  -2.135082e-02
## 9-444152     -6.110905e-03  -3.407945e-03
## 9-444189     -1.179665e-02  -1.035229e-02
## 9-444201     -4.506108e-02  -2.236035e-02
## 9-444225      1.113854e-01  -2.329560e-02
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## 9-444353      1.011016e-02  2.140323e-03
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## 9-444570      7.079998e-03  -2.801887e-03
## 9-444578      6.948469e-05  -5.165064e-03
## 9-444609     -5.651334e-02  -3.370638e-02
## 9-444636      3.079283e-02  -2.753104e-02
## 9-444665     -4.020187e-03  -4.325564e-03
## 9-444675     -3.039619e-02  3.741733e-02
## 9-444686     -6.094369e-03  -4.994548e-03
## 9-444766     -4.540650e-02  -1.135492e-02
## 9-444780      9.573892e-03  1.389628e-02
## 9-444828      3.894502e-03  8.665752e-03
## 9-444874      7.191403e-03  -2.841713e-02
## 9-444880      1.387079e-02  -1.044959e-01
## 9-444942     -3.924237e-02  1.737592e-02
## 9-445061      2.179495e-03  -3.525989e-03
## 9-445171      2.114603e-03  -3.818358e-03

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## 9-445320      -4.112460e-03  2.095475e-02
## 9-445330      2.969842e-03 -1.455627e-02
## 9-445372      8.239934e-03 -4.815387e-03
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## 9-445529      2.114603e-03 -3.818358e-03
## 9-445548      7.190709e-03  7.777234e-03
## 9-445614      8.367727e-03 -2.914694e-03
## 9-445623      6.578879e-03  5.438018e-03
## 9-445639      1.638994e-02 -9.393991e-03
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## 9-446036      2.219814e-03 -6.946050e-02
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## 9-446267      -8.543265e-03 -4.299405e-02
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## 9-446302      7.459089e-03 -4.251283e-03
## 9-446471      2.114603e-03 -3.818358e-03
## 9-446477      8.933008e-03 -3.259594e-03
## 9-446519      -4.112460e-03  2.095475e-02
## 9-446529      1.147964e-02  4.335026e-03
## 9-446530      -1.211289e-02  8.464259e-02
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## 9-446584      -1.290208e-03 -7.905278e-03
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## 9-446656      -3.343976e-03  4.033059e-03
## 9-446686      5.780183e-03  4.113368e-03
## 9-446756      -8.240449e-02 -1.186041e-02
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## 9-446851      -1.948043e-02  1.155267e-02
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## 9-447193      -1.643450e-02  2.680460e-02
## 9-447243      -5.237247e-03 -1.047619e-02
## 9-447272      4.693969e-02 -2.559215e-02
## 9-447335      -2.573989e-02  5.571467e-02
## 9-447342      -2.728874e-02  4.031906e-03
## 9-447421      2.302843e-03  8.598429e-04
## 9-447449      -1.581468e-02 -1.978551e-05
## 9-447463      1.389594e-03 -4.625464e-03

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## 9-447663 1.846249e-02 5.904086e-03
## 9-447703 -4.859610e-02 1.063341e-02
## 9-447817 6.204798e-02 -3.103219e-02
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## 9-447903 -1.462904e-02 -2.313869e-03
## 9-447908 1.389594e-03 -4.625464e-03
## 9-447952 1.053450e-02 4.901359e-03
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## 9-448010 1.626502e-02 -8.005408e-03
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## 9-448166 5.179738e-02 -3.951958e-02
## 9-448174 2.224819e-03 4.130421e-03
## 9-448238 -1.675411e-03 1.347300e-03
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## 9-448462 -5.118272e-03 4.464398e-02
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## 9-448607 4.275854e-03 -6.164913e-03
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## 9-448824 -3.936891e-03 -1.969749e-02
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## 10-450087     7.749684e-04 -5.728345e-03
## 10-450094     1.425475e-02  1.597951e-03
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## 10-450689     -3.814023e-03 -1.308420e-02
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## 10-451059     3.116257e-02 -8.602402e-03
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## 10-451769 -7.203307e-04  -1.116818e-02
## 10-451791 -1.945892e-02  -1.118080e-03
## 10-451844  9.760105e-03  2.686937e-02
## 10-451867 -8.185556e-03  -1.907402e-03
## 10-451953 -2.155832e-03  8.860148e-03
## 10-452117_2 1.979628e-02  5.620873e-03
## 10-452164 -2.000143e-03  -7.963120e-03
## 10-452218  1.931248e-03  -4.479005e-03
## 10-452329 -3.771811e-02  -1.514287e-02
## 10-452332 -1.430850e-02  -2.310485e-04
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## 10-452437 -4.928376e-03  4.559418e-02
## 10-452460 -4.928376e-03  4.559418e-02
## 10-452507 -1.103742e-02  1.796639e-02
## 10-452518 -1.508309e-03  3.267774e-03
## 10-452567 -9.779293e-03  1.426737e-02
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## 10-452627  2.570428e-03  1.713330e-02
## 10-452683 -1.314070e-02  -7.240750e-03
## 10-452717 -2.595654e-02  1.711472e-02
## 10-452744 -4.588624e-03  -8.507823e-03
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## 10-452847 -1.006482e-03  1.511054e-02
## 10-452953 -9.285111e-03  -3.438676e-03
## 10-452983 -5.836828e-03  -1.626044e-02
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## 10-453274 -1.413014e-03  -4.980010e-03
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## 10-453710  3.600981e-03  -1.207041e-03

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## 10-454004 -4.606088e-02 -2.970118e-03
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## 10-454376 -2.778740e-02 -2.034555e-02
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## 11-519378  6.874296e-03  -7.905613e-04
## 11-519388  6.497526e-03  5.099112e-03
## 11-519546  9.922205e-04  -6.549245e-03
## 11-519577 -1.994230e-03  3.444750e-02
## 11-519609  2.327972e-03  -2.382545e-03
## 11-519732  3.489520e-04  -7.420149e-03
## 11-519840  1.543524e-02  1.885512e-03
## 11-519852 -1.298380e-02  -9.877628e-04
## 11-519870  2.154251e-02  7.572197e-03
## 11-519906  2.154251e-02  7.572197e-03
## 11-519928 -7.467816e-03  -1.665090e-02
## 11-519941 -6.604973e-03  6.747961e-03
## 11-519948 -8.493575e-02  -8.491384e-02
## 11-519984 -2.934312e-05  -7.113100e-03
## 11-520007 -2.934312e-05  -7.113100e-03
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## 11-520090 -1.194647e-02  7.999713e-06
## 11-520097 -2.784344e-02  -4.846062e-03
## 11-520188  2.774765e-02  5.029325e-02
## 11-520261  2.774765e-02  5.029325e-02
## 11-520271 -1.059435e-02  1.772488e-02
## 11-520310  3.352693e-03  4.490038e-03
## 11-520387  6.442888e-04  3.568956e-02
## 11-520417 -2.493845e-02  2.833346e-03
## 11-520488  1.466393e-02  2.595326e-03
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## 11-520507  3.525404e-02  6.850514e-02
## 11-520562  1.734411e-02  5.836017e-03
## 11-520631 -2.281195e-02  6.963364e-02
## 11-520699 -2.847118e-02  -5.851433e-03
## 11-520745 -6.408947e-03  -1.072191e-02
## 11-520777 -1.961874e-02  5.380236e-03
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## 11-520827 -1.011728e-02  -2.316137e-02
## 11-520838 -2.111521e-02  5.812171e-02
## 11-520847 -1.869125e-02  4.864370e-02
## 11-520862 -6.135904e-02  -6.159975e-02
## 11-520892 -1.236377e-02  -4.713926e-03
## 11-520916 -9.707103e-03  4.529736e-03
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## 11-521177  3.729268e-04  -1.643885e-02

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## 11-521357  3.214699e-03 -2.336431e-03
## 11-521370  4.605132e-03 -2.262892e-02
## 11-521403  -4.401302e-04 -1.443792e-02
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## 11-521495  -6.220677e-03  1.321236e-04
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## 11-521755  -1.507528e-03 -9.744644e-03
## 11-521760  -1.403608e-02 -1.372890e-03
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## 11-522142  2.628878e-02 -3.923038e-03
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## 11-522316  -9.626372e-03 -6.968094e-03
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## 11-522813  -2.418978e-02  6.191035e-02
## 11-522845  -3.156192e-02 -8.804408e-03
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## 11-522981  -4.718007e-02  1.176634e-02
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## 11-523072  -7.801964e-03  1.230800e-02
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## 11-523305  -2.527891e-04 -5.172722e-03
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## 11-523681  2.556221e-02  8.271622e-03

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## 11-523988    -5.776598e-03  3.095666e-03
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## 11-525734    -9.632492e-03  -3.393525e-02
## 11-525794    -6.990531e-03  -5.595581e-04
## 11-525903    -1.498726e-02  -8.702726e-03
## 11-526023    -1.498726e-02  -8.702726e-03
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## 11-526146   -3.211834e-02  -6.110815e-03
## 11-526167   -4.505108e-03  -2.456649e-02
## 11-526215   -1.390769e-02  2.532207e-03
## 11-526295   -3.085945e-02  -5.861697e-03
## 11-526303   -6.990531e-03  -5.595581e-04
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## 11-527867    6.863349e-03  1.133402e-02

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## 11-528006 2.101261e-03 -1.792673e-02
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## 11-528060 3.010485e-03 1.127908e-02
## 11-528134 -2.033304e-02 -1.649867e-03
## 11-528242 -1.559839e-02 -4.237286e-02
## 11-528309 1.708833e-02 -1.410039e-02
## 11-528317 8.470126e-02 -1.764960e-03
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## 11-528344 -4.017901e-03 -2.555154e-02
## 11-528393 -8.328005e-03 3.031223e-02
## 11-528402 -3.326731e-02 -3.597771e-02
## 11-528472 1.737050e-03 1.818055e-02
## 11-528474 -1.558965e-02 1.317991e-02
## 11-528542 -2.322542e-02 3.535358e-03
## 11-528603 1.187237e-02 2.991488e-03
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## 11-528800 1.038014e-02 5.259560e-03
## 11-528928 -1.011786e-02 3.315984e-04
## 11-528959 9.723688e-03 -1.661393e-02
## 11-528986 1.287391e-03 7.948660e-03
## 11-529040 -7.768313e-03 2.826916e-02
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## 11-529100 3.643337e-03 1.338159e-02
## 11-529112 8.118060e-03 9.111326e-03
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## 11-529548 -6.853023e-03 -1.499626e-02
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## 11-529714 2.696478e-02 7.853898e-03
## 11-529724 3.998259e-02 -3.229315e-02
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## 11-530174 -2.807384e-03  1.347116e-02
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## 11-530769 -2.248413e-02 -2.076526e-03
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## 11-531042  6.336447e-02 -5.626919e-03
## 11-531055  1.995576e-02  5.348566e-02
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## 11-531180  7.815961e-02 -4.716641e-05
## 11-531194  1.525124e-03 -3.002535e-03
## 11-531245  6.227994e-02 -5.425964e-03
## 11-531323  1.568985e-02 -2.327690e-02
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## 11-531454 -4.528975e-04  5.982374e-02
## 11-531457  2.265668e-02  4.545678e-02
## 11-531471  7.417763e-03 -1.194308e-02
## 11-531477  1.201877e-03  1.077236e-02
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## 11-531568 -4.166557e-03 -3.885648e-03
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## 11-531700 -7.023195e-03  9.911698e-03
## 11-531705 -5.660470e-02 -9.766744e-03
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## 11-531730 -2.488502e-02 -1.049453e-02

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## 11-532170    -1.032859e-02  9.067983e-03
## 11-532245    -2.291185e-02 -1.039852e-01
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## 11-533034    -1.555727e-02  1.675994e-02
## 11-533056    -5.043239e-03  6.456205e-03
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## 11-533197    3.981643e-02  1.470610e-02
## 11-533383    -3.150297e-02  2.998355e-02
## 11-533408    -2.682666e-02  8.751319e-03
## 11-533434    3.931644e-02  1.446168e-02
## 11-533456    1.320279e-02  4.139865e-02
## 11-533465    -2.667199e-02 -2.878860e-02
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## 11-533507    -6.050578e-02 -4.713219e-02
## 11-533527    7.849144e-02  1.662391e-03
## 11-533535    1.043234e-03 -1.517032e-02
## 11-533544    -2.552080e-02  3.815984e-03
## 11-533550    -2.314279e-02  2.355462e-02
## 11-533558    -2.552080e-02  3.815984e-03
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## 11-534381 -7.637208e-03 -7.132721e-03
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## 11-535126 -8.443592e-02 -8.039042e-02
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## 11-535257 -1.460799e-02 -1.476631e-02
## 11-535280 -3.066087e-02 2.784717e-02
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## 11-535823 2.751021e-02 8.624672e-03
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## 11-536186 -4.388796e-02 -5.975163e-03
## 11-536217 -2.294023e-02 -2.648022e-02
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## 12-582794 -2.345773e-02 -1.204780e-03
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## 12-582913 2.601932e-02 -8.990611e-03
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## 13-608224  1.628830e-02  3.722577e-03
## 13-608274  -1.636691e-02  5.871221e-03
## 13-608286  -1.962585e-02  3.485227e-02
## 13-608343  -1.211633e-02  1.614422e-02
## 13-608408  -4.035923e-03  -5.914972e-03
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## 13-608471  -2.477665e-02  -2.941072e-02
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## 13-620366 -2.320444e-03 -2.406065e-02

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## 13-621187 1.387378e-02 -7.031033e-03
## 13-621254 -9.019134e-03 7.371415e-03
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## 13-621301 -1.019864e-02 -6.935716e-03
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## 13-621315 -6.786125e-03 9.104888e-03
## 13-621342 -3.647766e-02 -7.306555e-03
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## 13-621779 -2.354305e-03 -1.044171e-02
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## 13-621802 7.027679e-03 -2.468766e-04

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## 13-630941 -3.911925e-03 -7.476414e-03
## 13-631042  4.373750e-03 -2.864508e-03
## 13-631042_2 -2.663655e-02 -3.895899e-02
## 13-631045 -2.121955e-02 -9.671900e-03
## 13-631048  4.574283e-02 -1.644371e-02
## 13-631106  2.532712e-03 -4.431626e-03
## 13-631130  4.574283e-02 -1.644371e-02
## 13-631158  1.446102e-02  6.893828e-03
## 13-631223 -7.318033e-02 -1.735407e-02
## 13-631251 -2.357053e-02  2.467286e-02
## 13-631259  1.380820e-02  1.907234e-02
## 13-631263  3.274753e-02 -2.548512e-02
## 13-631289  6.106821e-03 -7.072700e-03
## 13-631343  1.361531e-02 -2.655180e-04
## 13-631370 -3.314391e-02 -6.676571e-03
## 13-631395  1.927206e-02  2.244551e-03
## 13-631406  1.258169e-02  7.042575e-03
## 13-631429 -2.988728e-03  4.743662e-05
## 13-631454  1.920223e-03  1.233859e-02
## 13-631512 -5.292754e-03 -4.993074e-03
## 13-631662  8.735672e-04  4.082682e-02
## 13-631782 -2.374358e-02  3.666583e-02
## 13-631838  4.300505e-02 -2.060246e-02
## 13-631863 -4.926450e-04 -1.285796e-02
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## 13-631934 -4.813578e-03 -1.172962e-02
## 13-632023  8.360376e-03  6.606000e-03
## 13-632031  5.433803e-02 -4.955526e-02
## 13-632054  1.447821e-03 -4.032315e-03
## 13-632060  9.624639e-04  8.280124e-03
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## 13-632158  1.126581e-02  4.546964e-03
## 13-632174 -7.148979e-03  8.295235e-03
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## 13-632216  4.574283e-02 -1.644371e-02
## 13-632273 -2.670413e-02 -6.957125e-04
## 13-632285  1.129250e-02  5.211450e-03
## 13-632326  5.074086e-02 -4.553807e-02
## 13-632356  1.923963e-02  6.878901e-03
## 13-632373 -2.594062e-03 -1.520257e-02
## 13-632383  6.598090e-03 -1.680005e-02
## 13-632613  4.649218e-02 -4.981296e-02
## 13-632627  4.739719e-02 -3.108684e-02
## 13-632634 -1.630941e-02  6.635538e-02
## 13-632746 -1.106798e-02  1.889749e-03
## 13-632785  3.276822e-02  1.918939e-02
## 13-632785_2 3.213946e-02 -1.677768e-02
## 13-632799  3.459784e-03 -6.971016e-04
## 13-632803  4.574283e-02 -1.644371e-02

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## 13-632820  1.090455e-02  5.319850e-03
## 13-632850 -1.086464e-02  4.501032e-02
## 13-632859 -1.490416e-03  7.763342e-03
## 13-632877 -1.041388e-02  -4.122598e-02
## 13-632889  1.173994e-02  6.130747e-03
## 13-632962  1.842491e-02  1.617312e-02
## 13-632986 -4.781284e-03  1.918782e-03
## 13-633062  1.009131e-02  2.047616e-03
## 13-633075  3.288812e-02  -2.876261e-02
## 13-633146  1.266291e-02  2.938524e-02
## 13-633161  2.193516e-02  8.095128e-03
## 13-633198  3.627338e-03  2.618718e-03
## 13-633222  7.013050e-03  -2.126943e-03
## 13-633374  1.062834e-02  6.112975e-03
## 13-633382  4.104590e-02  5.207699e-02
## 13-633411  1.258446e-02  -5.932632e-04
## 13-633421  2.691649e-02  -4.567387e-02
## 13-633439 -8.331440e-02  3.517743e-04
## 13-633479 -3.098347e-02  -3.823395e-02
## 13-633544 -2.247372e-02  2.862015e-02
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## 13-633648  1.980444e-02  6.677524e-03
## 13-633666  2.358355e-03  -2.949179e-03
## 13-633711  3.776483e-03  7.938407e-03
## 13-633771  2.647952e-02  -6.456904e-03
## 13-633812 -1.446584e-02  -4.426316e-02
## 13-633897 -1.001609e-02  -7.041911e-03
## 13-633908 -3.996112e-02  -1.051658e-02
## 13-633932 -1.771507e-03  1.847398e-03
## 13-633979 -1.490859e-02  1.539784e-02
## 13-634000 -3.887640e-02  -1.209569e-02
## 13-634061 -2.755480e-03  -1.497074e-02
## 13-634068 -1.233950e-03  2.935341e-03
## 13-634165 -5.462657e-03  -1.904400e-03
## 13-634177  2.358355e-03  -2.949179e-03
## 13-634191  1.211109e-02  -7.613227e-04
## 13-634258 -2.729113e-03  -3.995089e-03
## 13-634259  2.315530e-02  -2.749398e-02
## 13-634264  7.058425e-03  -1.206112e-02
## 13-634326  1.018326e-02  7.256582e-03
## 13-634427  2.022869e-04  6.065458e-02
## 13-634438 -3.904027e-03  5.961405e-03
## 13-634450  1.882773e-02  3.463647e-02
## 13-634606 -6.121552e-02  -5.493910e-02
## 13-634631  1.236472e-02  4.158537e-03
## 13-634658  1.070367e-02  7.059561e-03
## 13-634769 -3.029298e-02  -3.700935e-02
## 13-634819 -1.978401e-02  2.597726e-02
## 13-634923 -2.727294e-02  -1.240790e-02
## 13-634954  5.834178e-03  1.508514e-02
## 13-635021  8.556495e-03  -2.255419e-02
## 13-635078 -2.370630e-02  -5.090902e-03
## 13-635142 -3.314070e-02  -3.997833e-02
## 13-635185 -8.421753e-03  -9.680403e-03

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## 13-635188  2.358355e-03 -2.949179e-03
## 13-635216  5.803315e-03  2.552103e-03
## 13-635261  1.004087e-02  2.548277e-02
## 13-635313  1.916580e-03 -1.483531e-02
## 13-635324  -5.654088e-05  8.771786e-03
## 13-635376  4.075815e-03 -1.521212e-02
## 13-635411  -9.260916e-03 -5.502412e-03
## 13-635419  -4.457961e-04  3.250214e-03
## [ reached getOption("max.print") -- omitted 9705 rows ]
##
## $sites
##          RDA1        RDA2        RDA3        RDA4        RDA5
## 34   -0.8643058101 -0.916613040 -0.6236796023  0.428157362 -1.973140139
## 35   -1.1049385533  2.169443588  1.4839046750  0.386991699  1.178208878
## 45    1.8956905553  0.279013669  0.3473426458 -3.350123408  1.738145404
## 46    0.0926183526 -1.908499687 -0.2064069835  0.010687883  0.402323045
## 47   -0.4219394159 -3.165675106  0.1950281794  2.892616423  3.469822051
## 65   -0.4897279971 -2.674304799 -0.4102363620  1.531973851  0.442008667
## 66   -0.0133615916 -1.320640848  1.9251736845 -1.521890966 -1.742268735
## 73    0.1861580594 -1.174328069  0.7788243903 -1.450925372 -0.609019138
## 86    0.9346324809 -1.202897165  0.2663101598 -2.102042525  0.653039228
## 107   -1.3947326501  2.104726228  0.4925586606  0.755148570 -0.239641371
## 120   3.0830513891  0.229857897 -0.4860463273  2.623740300 -2.193094741
## 128   1.5631136464  0.446653987  0.2324339705 -1.820481423  1.577287568
## 133   -0.1449543655 -2.233478843 -0.0762783680  0.832828110  0.835857823
## 165   -0.6105727515 -2.158876735 -1.3520231711  0.995173337 -0.517218580
## 174   -0.5120319860 -1.266462305  1.2366055162  0.729638783  3.672981589
## 176    1.1655283955 -1.141007315  0.3383112783 -3.827887168 -0.367079678
## 195    1.3779394830 -0.924830033  0.4189674478 -3.908929798 -0.203781675
## 199   -0.5754163038  0.504806937  1.4778651452  0.349286766 -0.020122713
## 208   -0.5239183252 -1.340639092  0.5294222413 -0.056574261 -2.288675827
## 216   -1.0705735443  1.362987755 -2.3459343744 -0.073204208  0.588825064
## 217   -0.4219785477 -2.638105994 -0.3100722393  1.509493671  0.461582257
## 222   -0.6434431333 -0.396519784  1.5307912216  0.178178695 -1.356983838
## 225    0.9833026810 -1.149829274  0.4234119752 -3.232127381 -0.326769484
## 231   -0.3706442279 -2.587836777 -0.2348343097  1.437377932  0.537781048
## 237   -0.4874194155 -1.274572430  1.2675347546  0.935834501  4.484445503
## 255    1.8196576012  0.255357025  0.3072726374 -3.095853282  1.837121877
## 256   -1.1572017578  1.223566427 -2.3918363173 -0.059538097  0.308695755
## 262   -1.2839896816  1.747316706  0.9978651497  1.023274163 -0.118285923
## 269    1.0283174543 -1.206357989  0.1682927097 -2.378273175  0.441584519
## 270   -1.0368354467  0.314146990 -2.4986028524 -0.209398655  0.166999712
## 272   -0.4387149128 -3.213707025  0.1589120921  2.853114051  3.201764686
## 281    1.4199860075  0.684197825 -0.1398643210 -0.329484992  0.924087259
## 294   -1.2552049394  2.400765639  1.5020543430  0.223604153  0.707341300
## 307   -0.0262690155 -1.387740659  1.5565897293 -2.198053456 -1.568891405
## 310    2.1360421061  0.276391894  0.1033605126 -1.209136191  1.357963527
## 315    2.0162874829  0.253743226  0.0865173391 -1.502834326  1.360563277
## 339   -1.1768545427  0.926655130 -0.1766424926  0.786669147 -0.842008973
## 349   -1.1477554976  2.186623536 -1.0471203765  0.123170779  0.406484640
## 353   -0.9141569949  1.745234789  1.6365781773  0.570691069  1.171719070
## 360   -1.3308399606  1.892163026  0.4535183909  0.807824860 -0.387883520
## 383   -0.5475515694  0.947373231  1.2042719484  0.133199039  0.668427965
## 386    2.7151360077  0.150698958 -0.1682561163  0.823427830  0.478591303

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## 387  1.8403001974 -0.870217135  0.2175795489 -3.370560989  0.357090741
## 398 -0.9975466642  1.205834868 -2.3084572889 -0.107456020  0.772950843
## 405  1.9013958962 -0.827152515  0.1513381713 -3.163308332  0.447619766
## 406 -0.6424356341 -1.066286340  1.3535525577  0.207429532 -2.331366883
## 413 -0.9707851791 -1.149739214 -0.5520731706  0.691408539 -2.368073293
## 424 -0.7800941402 -1.242256342  0.4052133512  0.623904074 -2.749128466
## 438 -0.7027713702 -1.316346297  1.0013392261  0.405971795 -2.956692926
## 439 -1.2120953418  1.214819092  0.4273004357  1.156142906 -0.850325039
## 450 -0.2573236521 -1.636096868  1.7120261665 -1.076577923 -1.614545113
## 451 -1.3734850313  2.003055615  0.5370610683  0.778566336 -0.265186534
## 453  0.4585367173 -0.536236811  1.2818262364 -1.304631881 -0.476659466
## 466 -1.2794238038  1.604228024  0.5909652109  1.083307184 -0.596133804
## 470 -1.2725271871  2.052532923 -1.9887333472 -0.025338380  0.429042637
## 480 -1.1943749567  0.941875083 -0.1601147540  0.805914714 -0.900560471
## 481 -0.0858831358 -0.390772720  1.2764613567 -0.748513888 -0.734032066
## 482 -1.1324199925  2.193486060 -1.1471855827  0.215407820  0.437269175
## 488  1.4801794626 -0.981756124  0.1089838119 -2.822967633  0.105770277
## 503 -1.2202453661  0.853148679  0.9354684524  1.385004221 -1.166382694
## 506 -0.1405747921 -1.747134234  1.7212096211 -1.618533003 -2.345305060
## 519 -1.1382443373  0.367876775  1.0539341175  1.265701170 -1.475963662
## 520  2.7549160327  0.330851266 -0.3648355714  2.222537083  0.028187525
## 521  0.9361500436  0.659924238  0.4979449703 -1.819422088  1.565995632
## 526  0.2191771515  1.289900723  0.3066555883 -1.328154091  1.543090664
## 531 -1.3909008505  2.374656087 -0.0226254759  0.445964094 -0.074438985
## 532 -1.4408516050  2.762741336  0.6909779508  0.800193379  0.521468334
## 538 -1.3166605994  1.592383022 -2.1580140959  0.080861956  0.015487474
## 555 -1.0475484465 -0.198095780 -0.0295928282  0.775212026 -2.001741826
## 570 -0.6866219352  1.717631581  1.3426661146  0.218262978  1.414990091
## 573 -0.4280136780 -1.599635241  1.7221485955 -0.520046385 -3.052995426
## 574 -0.5113175161 -2.335659440 -0.6849265985  1.363930073  0.505981780
## 583  2.8755997694  0.369397397 -0.4169993195  2.762805748 -0.354982754
## 608 -1.1706051577 -0.466131802 -3.4013895413 -0.346533871 -0.365319180
## 630 -1.3883456385  2.395545845 -0.5740558950  0.199019839 -0.076538508
## 642 -0.4216368168 -1.123040365  1.4597642219 -0.198368617 -2.292672848
## 645 -0.6669137263 -1.260600555 -0.4260902723  0.075585775 -1.872224941
## 650 -1.1857534744  1.121085659  0.9634306252  1.127811810 -0.600693600
## 653 -0.5868583263 -1.465568191  1.4280585995  0.905976967  2.743277762
## 666  1.2813364980 -1.090595966  0.2894900967 -3.509668826 -0.195471745
## 671  2.2695921096 -0.296240914  0.0273126323 -1.076989368  0.499469981
## 672 -1.2576506545  2.220652716 -1.3536895591  0.076479371  0.288568342
## 679 -0.7157719321 -0.339822618  1.6527656868  0.263257275 -1.688295146
## 682 -1.2301153497  2.445049084  1.1366956207  0.262292190  0.700887678
## 689 -1.1502773076  2.142616678  1.4898734231  0.512088266  1.063335184
## 693 -0.2489808401 -2.401059081 -0.1374302838  1.069337833  0.760710380
## 696 -0.4847447340 -2.336469670 -0.7797580931  0.992345939 -0.005503454
## 706 -1.0433110722  2.147566863  1.2664227562  0.138363448  0.996566879
## 726  2.0061880765 -0.570672638  0.0177167490 -1.413005422  0.247448347
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## 754  2.9024330700  0.284543510 -0.4074859922  2.533630788 -0.442644131
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## 781  2.9850785528  0.099306060 -0.4017493095  2.163735754 -1.673574381
## 798 -1.2048814586  2.266237084  1.3925279346  0.282414439  0.825311219
## 809  2.8526928589  0.243390034 -0.3162130957  2.267182281 -0.050578361

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## 816 -1.0999035170 1.612656379 -2.2185316762 -0.061892593 0.763966034
## 817 -1.1968057517 -0.367739071 -3.4078393206 -0.289050265 -0.305357903
## 846 -1.3635938139 2.248673252 0.7787714158 0.556354852 0.018734007
## 856 -0.0873216736 -2.166828341 -0.0069311932 0.628156636 0.762605567
## 858 -0.4785631878 -3.072829351 0.1645018486 2.805814420 3.318392234
## 862 0.3353128667 -1.237289084 1.2153022013 -2.052056889 -1.554314792
## 875 -1.2531186414 2.413266330 1.5207062633 0.266622493 0.791123807
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## 887 -0.2099000644 -1.331911832 1.7320672366 -1.027724853 -2.177650826
## 892 -0.4413961783 -3.379074332 0.2541333413 3.166697180 3.713360791
## 898 -0.6121332806 -2.283156857 -1.0310298189 1.229016575 -0.232220927
## 902 -1.4504998901 2.706068465 0.8296937524 0.455743140 0.154427685
## 908 0.0022364893 -1.511849768 2.1091068226 -1.683939439 -2.083210301
## 912 -0.2488636010 -2.405775769 -0.1110651452 1.093770108 0.982809753
## 916 0.3357761818 -1.084222202 1.4785721387 -1.654077158 -1.104576228
## 926 -0.5320560963 -1.374316960 0.5806509010 -0.083979079 -2.299712293
## 936 -0.5186100900 -1.288762210 1.2391818239 0.991535853 4.464786267
## 947 -0.7780997899 -1.399343952 1.1998432912 0.187125912 -3.271348033
## 958 2.8121384559 0.383783714 -0.3971223084 2.662761650 -0.253293254
## 981 -0.4359394499 -1.954229897 1.7172126384 -0.681570808 -3.041048584
## 983 -1.2215968040 2.134501407 1.5026440371 0.549650605 0.857419180
## 997 -0.7687071543 -1.244916272 0.4159853515 0.620294072 -2.721691768
## 1017 2.6290964834 0.037052834 -0.4219446327 1.211284955 -1.347582757
## 1027 2.2367185780 0.279623075 -0.1348964210 0.276842502 0.811487878
## 1037 -0.5354086583 -2.419840636 -0.6495412800 1.323810494 0.134176824
## 1067 -0.9392081127 -1.661748881 -3.2974720787 -0.631491753 -0.855186612
## 1079 -0.8472508060 -1.749008206 -2.6606717320 -0.082865339 -0.601889850
## 1094 1.6611755191 0.407937756 0.2508771796 -1.854405817 1.577522533
## 1099 0.0751790170 -1.083685917 0.7336923745 -1.200165624 -0.250939682
## 1101 0.2374156282 -1.380671768 0.3032578156 -0.752431114 2.704882093
## 1103 -1.3578359239 1.752147030 0.3273781805 0.980206118 -0.412175446
## 1112 2.9287404136 0.085387617 -0.3666075687 2.082983737 -1.387325971
## 1116 0.2124709145 1.202943268 0.2612269728 -1.229892570 1.618237175
## 1117 -0.3745413426 -3.117924657 0.1980023377 2.708024612 3.225230205
## 1145 -0.6449753049 -1.597583056 1.3867628988 -0.116549127 -3.407833249
## 1146 2.8213932018 0.234855826 -0.3070604696 2.192476715 0.042599982
## 1150 0.0438403160 -1.355154353 1.5303245291 -2.235688246 -1.498026307
## 1155 -0.1376475651 -0.955974165 1.7690258599 -1.202819140 -1.475161400
## 1157 2.7550637475 0.109963349 -0.1791602817 0.931406252 0.602574811
## 1159 -1.2101382119 1.965658265 -1.8743640656 0.007023899 0.493996859
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## 1166 3.0916981354 0.314337250 -0.4760863973 2.856981258 -2.003055796
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## 1190 0.3634144524 -0.700863906 1.3576233232 -1.386257470 -0.677619339
## 1199 -0.6224712101 -1.489711378 1.4056807708 0.998194421 2.643831429
## 1204 2.6782081426 -0.021149230 -0.1243827063 0.453047025 0.335854845
## 1205 -0.0699731109 0.341346850 1.2912260248 -0.283697817 0.019266625
## 1210 0.2111446044 -1.202594571 0.8499541419 -1.511744937 -0.682410881
## 1218 -0.4292644622 -3.078044652 0.1865483565 2.686711525 3.318725687
## 1219 0.4485548985 -1.186252309 1.2786238197 -1.976220772 -1.366662914
## 1221 1.9917310000 0.200575475 0.3096845211 -3.433466592 1.843107340

```

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## 1230 -0.8890798692 1.321027095 1.4328975607 0.527992219 0.618013579
## 1231 -1.2092782410 2.303284135 -1.0080775531 0.138214541 0.446134030
## 1240 2.6653109404 0.081211898 -0.0539262688 0.070622372 0.997770547
## 1242 -1.1360130363 1.701628561 -2.3444419332 -0.023038633 0.733556888
## 1249 -1.2131249463 -0.340318073 -3.4686133445 -0.356818012 -0.454716529
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## 1253 2.5335561485 -0.048999049 -0.3076979484 0.701645521 -0.709680171
## 1265 -1.0255442695 1.616852213 1.2929485553 0.671869224 0.391231113
## 1268 0.3922140476 1.170285900 0.3377372458 -1.333332755 1.618756097
## 1273 -0.9716691295 2.143226190 -1.1632371868 0.230474581 0.433325954
## 1274 2.0027360349 0.169726600 0.3086484718 -3.398309927 1.827673610
## 1294 0.1990602084 -1.246246156 1.2239844818 -1.834442169 -1.462525748
## 1295 -0.9625464647 0.227934312 1.0844859392 0.702485709 -1.360057975
## 1300 -0.6094284394 -1.386708042 1.3601899244 1.079362599 2.737649979
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## 1347 -0.9403030461 -1.065224162 0.3163536080 0.820468300 -2.626485312
## 1352 -0.5587697128 -1.401320507 1.3476869732 0.947727037 2.454108023
## 1357 1.1591163608 0.657275910 0.0553472874 -0.661370806 1.034430536
## 1370 -1.2878101927 1.402681105 0.5433452402 1.180608081 -0.691154325
## 1374 -1.2878023187 2.169366376 1.2963637946 0.542242658 0.764668615
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## 1415 1.3301119840 -1.052328651 0.3153081429 -3.807989407 -0.327114004
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## 1432 1.6986966837 -0.289970876 0.3293272448 -2.592463323 0.834244690
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## 1448 -0.6812052160 -1.559706832 0.8951325468 0.232232910 -3.051777715
## 1449 -1.1709359549 2.382204144 1.5718549964 0.207459969 0.925693537
## 1455 1.9900106057 -0.190018405 0.1861779074 -1.974472250 0.891453235
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## 1460 -1.4454533134 2.676984317 0.8080195423 0.861771035 0.520271145
## 1473 -0.1811577356 -1.649332815 1.8158501333 -1.696262707 -2.266788593
## 1480 -1.1839286267 1.440628204 -2.2437300905 -0.062344771 0.275400711
## 1490 -0.6936611539 -1.403501366 0.4696707365 0.485476539 -2.834934422
## 1497 -1.3422479588 2.263897793 -1.6809680767 -0.071382034 0.033143789
## 1503 1.6820530151 0.422033753 -0.0895369041 -0.112310846 0.738077775
## 1515 -0.8481707382 0.788072286 1.3116002502 0.588867137 -0.062495145
## 1520 -0.3792634509 -2.575385912 -0.2540782389 1.425079678 0.411762127
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## 1553 -1.2511575221 0.913775311 0.9061824930 1.389620338 -1.113202092
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## 1569 1.8595692012 -0.682864054 0.0474065935 -1.968493249 0.305749913
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## 1634 -0.9385810998 1.753435557 1.5580155859 0.697913252 1.148099729
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## 1683 0.8660135077 -1.198745731 0.2949610297 -2.090776075 0.799084814
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## 1716 -1.4394307249 2.307338319 0.2574800224 0.649566494 -0.180273661
## 1721 -0.4736188852 -3.395354557 0.2454481258 3.180528128 3.672756542
## 1749 -0.2859311617 -2.242358790 -0.2727440161 0.731657336 0.208872259
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## 1859 -0.4350069248 -3.253019948 0.2218232363 2.946024668 3.436025207
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## 1886 -0.9623909064 0.715618893 -2.0531780815 -0.216438588 0.453857882
## 1905 -1.1811402553 2.254982701 1.4328558166 0.253577453 0.907594256
## 1906 1.8847786563 -0.867349099 0.1994270523 -2.922666411 0.459066676
## 1910 -0.3535510609 -1.771575253 1.6827870861 -0.589509101 -1.697508737
## 1932 2.4587154509 0.208301883 -0.1006206233 0.699029392 0.767707638
## 1933 -0.8348657368 -0.746935893 0.5695650944 0.638668867 -2.318028282
## 1934 -1.0117290557 0.939967125 -2.1757508899 -0.135472247 0.378235383
## 1937 -1.1288404278 2.339326389 1.3294189566 0.105823343 0.761504737
## 1940 -0.5638285999 -1.377694885 1.1686932425 0.754371881 1.518618180
## 1954 -1.4702029800 2.751056215 0.7926452817 0.445106917 0.071616463
## 1963 2.9639463350 0.161259345 -0.3905121906 2.224320222 -1.617953272
## 1965 -0.8798761653 1.345543986 1.4259379357 0.513555474 0.567369806
## 1966 -1.2371022221 -0.233697108 -3.4657019411 -0.352363575 -0.420564659
## 1967 -0.9301506431 0.874555711 1.2299290636 0.656528946 -0.056512621
## 1974 3.0717476490 0.247699541 -0.4565620171 2.816023144 -1.891928209
## 1983 1.8041305386 -0.660442204 -0.0530651659 -1.926193938 0.151568756
## 2011 1.8234143736 0.319980990 0.1453374994 -1.774085886 1.376067390
## 2026 1.3284495540 0.647052596 0.0289810157 -0.526689136 0.964561253
## 2032 0.3280268076 -1.282655768 0.2782579240 -0.960926706 2.534618964
## 2054 -1.0671516569 1.114076053 1.0769568102 0.973877695 -0.337416964
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## 2080 0.4227036399 -1.232931825 0.3037913275 -1.204729726 2.403763295
## 2091 -1.1550711690 1.495363486 0.8402485958 0.992839011 -0.183171157
## 2102 -0.4276527014 -3.152169434 0.2187672485 2.775394025 3.431296538
## 2105 -1.2845707153 1.586540415 -1.9709136582 0.114075912 -0.172460340
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## 2136 -0.4143225755 1.740560457 0.8389298612 -0.227057794 1.478689190
## 2142 2.1228326563 -0.394624254 0.0557740788 -1.353545261 0.365647953

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| | | | | | |
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| ## 2146 | 1.5509084308 | -0.941733385 | 0.0471431137 | -2.921087596 | 0.002913565 |
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| ## 2180 | 1.5945674782 | -0.928724934 | 0.2371146225 | -3.820371342 | 0.163695191 |
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| ## 2189 | -1.2197876296 | 2.367682880 | 1.4070339286 | 0.294844693 | 0.775973106 |
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| ## 2196 | -1.0368523535 | -1.574408986 | -3.4180099106 | -0.460779595 | -0.926759314 |
| ## 2201 | -1.4297596089 | 2.704263379 | 0.6984425509 | 0.831287391 | 0.551879146 |
| ## 2208 | -1.1987030147 | 0.878282589 | 0.4029168404 | 1.186683475 | -1.317503681 |
| ## 2218 | -0.7552212119 | -1.278870994 | 1.1420443626 | 0.268327642 | -3.023950549 |
| ## 2222 | -0.8206590619 | -1.545004943 | -2.5844008597 | -0.618446118 | -0.947847928 |
| ## 2240 | -0.8230347566 | 1.040188325 | 1.4854883633 | 0.529260423 | 0.328476885 |
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| ## 2260 | -0.8478639690 | 1.679316112 | 1.6124953510 | 0.542793978 | 1.232621494 |
| ## 2265 | -1.2301211543 | 2.138802225 | 1.5730032297 | 0.598350735 | 0.949926663 |
| ## 2268 | 1.2910761450 | -1.094686765 | 0.3543578400 | -4.305408391 | -0.345711361 |
| ## 2269 | -0.6762618085 | -1.523494803 | 0.9152514917 | 0.201346379 | -3.037181244 |
| ## 2276 | -1.2813328947 | 2.116326962 | -1.8227242098 | 0.028572856 | 0.372360646 |
| ## 2284 | 0.2567110326 | -0.184904554 | 1.2442277567 | -0.912531050 | -0.316190182 |
| ## 2292 | -1.1826037415 | 0.930774876 | -0.1761128153 | 0.798999006 | -0.844131948 |
| ## 2295 | -1.2624033390 | 1.374032013 | 0.7756561389 | 1.272655450 | -0.640895033 |
| ## 2296 | -1.4654659892 | 2.773516060 | 0.8123982358 | 0.488760335 | 0.169899071 |
| ## 2298 | 1.8683128060 | -0.917558789 | 0.1544624449 | -3.403449871 | 0.486552308 |
| ## 2304 | -0.7619488690 | 0.724860726 | 1.3421688711 | 0.407331223 | -0.098707574 |
| ## 2318 | -1.1794608221 | -0.542878879 | -3.3675383917 | -0.413007553 | -0.503090025 |
| ## 2320 | 2.7507122327 | 0.081676708 | -0.1042230800 | 0.586530919 | 0.813230455 |
| ## 2350 | 0.2478506375 | -1.191650163 | 1.4553907556 | -1.716589176 | -1.313013003 |
| ## 2356 | -1.4708928424 | 2.738268803 | 0.7155221204 | 0.438570926 | 0.062127066 |
| ## 2358 | 0.0809687371 | -1.146121592 | 0.7963049779 | -0.997683889 | -0.039224219 |
| ## 2367 | 2.8163761793 | 0.334019309 | -0.3867569558 | 2.591241244 | -0.334343011 |
| ## 2415 | -0.8571763776 | 1.485381539 | 1.6096570502 | 0.485483147 | 0.948049547 |
| ## 2420 | -0.6273509468 | -2.358814826 | -0.7868564553 | 1.335314973 | 0.083701649 |
| ## 2429 | -0.3160020863 | -2.163593828 | -0.4036824559 | 0.713801402 | 0.122352384 |
| ## 2438 | 0.8680012757 | 1.035707791 | 0.0214386111 | -0.895563435 | 1.282279672 |
| ## 2439 | -1.4227396173 | 2.535799582 | 0.5439998615 | 0.430039441 | 0.032427051 |
| ## 2451 | -1.2301125762 | 1.203834037 | 0.2805014808 | 0.947779512 | -0.824574954 |
| ## 2452 | -0.5022941181 | -1.336799957 | 0.9035546463 | -0.123581969 | -1.851015916 |
| ## 2454 | -1.0139474771 | 1.301524336 | -2.4206119906 | -0.058649361 | 0.674115945 |
| ## 2462 | -1.3996344540 | 2.244040399 | 0.3150054815 | 0.631586317 | -0.176605295 |
| ## 2468 | 0.3285268298 | -1.285470694 | 0.2855389419 | -0.846803055 | 2.680232722 |
| ## 2474 | -1.0899283829 | -0.745768868 | -3.1363083280 | -0.371038405 | -0.522445780 |
| ## 2475 | -1.2533491886 | 1.137809773 | -2.6643040918 | -0.168068826 | 0.128026842 |
| ## 2497 | -0.4843946022 | -1.255789636 | 1.2621645123 | 0.984535794 | 4.288844403 |
| ## 2520 | -0.5990221901 | -2.333836322 | -0.6617212052 | 1.420903066 | 0.279265009 |
| ## 2529 | -1.1439922167 | 2.077482436 | -1.7122808960 | 0.052540865 | 0.528883581 |
| ## 2535 | -0.4806658674 | 0.113917908 | 1.4318247411 | 0.068360565 | -0.363796626 |
| ## 2552 | -1.4283259900 | 2.270698348 | 0.1833170598 | 0.636366840 | -0.183721698 |
| ## 2555 | -1.1119242041 | -0.152251049 | -3.1635570282 | -0.318439504 | -0.291259728 |
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| ## 2563 | 1.8359115945 | -0.683442975 | 0.0651996495 | -1.782364524 | 0.201551636 |
| ## 2570 | -1.1473527711 | -0.386526518 | -3.3935836218 | -0.319138787 | -0.282985043 |
| ## 2576 | -1.1739676142 | 0.617418255 | 0.9821962429 | 1.281223739 | -1.343797397 |
| ## 2583 | -1.1965473350 | 2.280768446 | -0.9824395513 | 0.167916985 | 0.439318751 |
| ## 2585 | -0.5186651324 | -1.302473997 | 1.2678448632 | 0.936424328 | 4.533301624 |

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## 2589  2.3608130579 -0.116787673 -0.3902207835  0.634890014 -0.897083946
## 2591 -0.5387754747 -1.368885944  0.5572342670 -0.152257353 -2.308250694
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## 2645 -1.0347609829  1.885147308  1.5724229779  0.578246150  1.180125191
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## 2680 -0.9991411858 -1.589797715 -3.4129106492 -0.592387203 -0.926981343
## 2686 -0.9552811659 -1.656377852 -3.3405750781 -0.579187704 -0.841168405
## 2709 -0.4134167727 -2.607812173 -0.3046643065  1.464349555  0.381633440
## 2718 -1.1724070444  2.414991456  1.2901612431  0.192906125  0.747356855
## 2723  2.7649944109  0.073784297 -0.0890986085  0.579492099  0.742346411
## 2732 -0.3375645887 -1.626906205  1.5110757135 -0.437538645 -2.418966314
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## 4870  1.361652909
## 4895  0.554973813
## 4924 -3.652337877
## 4945 -1.992087586
## 4947  1.263773852
## 4948  4.151626191
## 4953 -1.751106865
## 4962 -2.010314611
## 4969 -1.485118761
## 4974  1.268811155
## 4990  0.678428316
## 4998  2.585102013
## 4999 -3.794761663
## 5000 -0.066170452
## 5008  0.054174842
## 5014 -0.056210141
## 5024  2.495057358
## 5037 -0.361874423
## 5039 -3.254000916
## 5064 -0.689857823
## 5066  0.333674645
## 5085  0.076754586
## 5089 -3.017833486
## 5093  0.874594810
## 5095  0.726078606
## 5110  3.232243854
## 5118 -1.230394928
## 5125 -1.201501326
## 5145  3.181791057
## 5149 -1.049956437
## 5162 -0.993966373
## 5165  1.287142498
## 5168  1.077574243
## 5172 -0.106427786
## 5175  3.109315617
## 5176 -1.728306363
## 5181 -1.255530055
## 5184 -1.212731613
## 5189 -2.687920664
## 5193 -0.039792516
## 5213 -0.060560042
## 5214 -0.541387202
## 5216  0.062822527
## 5243  3.524748734
## 5255  0.798358152
```

```
## 5256  0.434388753
## 5261 -3.265905991
## 5264 -0.734165378
## 5268  0.204325509
## 5278 -1.781181895
## 5297  1.521776928
## 5300  0.831908805
## 5307 -1.456203203
## 5328 -0.465245943
## 5331 -1.042104582
## 5338  0.866786928
## 5354 -1.986919279
## 5361  1.413376962
## 5381 -0.183666967
## 5382 -1.223301672
## 5392  2.129220403
## 5427 -0.772003388
## 5434  1.478703294
## 5439  0.530668537
## 5442 -2.069074533
## 5449 -1.578777366
## 5454 -1.787394032
## 5468  0.342311192
## 5478 -0.359167952
## 5484  0.860587470
## 5500  0.076289524
## 5521 -1.318707617
## 5525 -3.445017740
## 5530 -0.804250588
## 5543 -0.764964361
## 5547 -0.596106827
## 5559 -1.686782066
## 5561 -1.018387833
## 5563  1.046011462
## 5567 -0.687196365
## 5570 -0.688357472
## 5573  0.443910889
## 5590 -1.118689949
## 5598 -0.010076161
## 5602 -0.798425585
## 5605 -0.990819866
## 5615 -0.659196788
## 5646 -0.328982474
## 5658 -0.105853658
## 5667 -2.039608104
## 5704  1.486600159
## 5709 -1.542036553
## 5710  0.221769022
## 5718  0.831461690
## 5721  1.540934841
## 5727 -0.260332802
## 5728  2.702244917
## 5729  0.460496552
## 5737  1.222040353
```

```
## 5743 -1.428929828
## 5750  2.290742076
## 5752 -0.319387381
## 5757 -1.084261099
## 5764 -2.356932520
## 5767  0.452761507
## 5768  1.088893565
## 5773  0.492301526
## 5797  1.481671414
## 5799  0.634556860
## 5807  2.768661643
## 5824 -1.990123217
## 5829 -0.454047667
## 5830  0.049129967
## 5838  0.375108714
## 5839 -0.449383868
## 5859  0.756316516
## 5863 -0.950260950
## 5865 -2.748101252
## 5899 -0.509993693
## 5901 -0.689946272
## 5907 -1.322690844
## 5916  0.448666698
## 5920 -1.140139580
## 5929 -1.239505149
## 5934 -0.242455139
## 5935 -2.249609223
## 5945 -0.613512607
## 5953 -0.351572565
## 5954  0.882346245
## 5966  0.752966427
## 5980 -0.812702992
## 5986  0.177370388
## 5993 -0.144457176
## 6003  0.928312708
## 6013  0.418918684
## 6024 -0.011628098
## 6050 -1.178861176
## 6051 -0.434605021
## 6057  1.344151537
## 6059 -1.871832155
## 6065  1.653755893
## 6087 -3.236194323
## 6110  0.212760027
## 6134 -2.735866680
## 6143  0.356518419
## 6154 -1.201874137
## 6160  0.356604979
## 6162 -0.676045072
## 6177  1.065906283
## 6186 -1.546017008
## 6188  3.841075996
## 6190  0.365529819
## 6194 -0.285567035
```

```

## 6197  1.145297938
## 6201 -0.279085590
## 6221 -1.882687189
## 6222  0.290491225
## 6223  0.257249275
## 6228  1.507104578
## 6236 -2.057741881
## 6238  3.091752691
## 6240 -2.053215166
## 6255 -3.107582256
## 6256 -0.654346388
## 6257 -0.154152757
## 6263 -0.873375923
## 6264  1.377409082
## 6270 -1.469488758
## 6275  0.172088204
## 6277 -1.843302710
## 6283 -0.472589593
## 6287  1.870662181
## 6293 -0.752699860
## 6307  2.045701777
## 6308 -2.229026981
## 6310  0.536871873
## 6352  0.417523520
## 6357 -2.443684213
## 6366  0.330691287
## 6381 -1.414251935
## 6388 -0.177375981
## 6389  1.454223128
## 6393  1.028328658
## 6407  0.237174429
## 6410 -3.359675466
## 6413 -0.100394480
## 6419  0.491962329
## 6428  0.090445850
## 6429  0.073369718
## 6438  0.623757338
## 6443 -0.051000286
## 6457 -0.283960567
## 6459 -0.734880438
## 6474 -1.089954921
## 6488  0.041996763
## 6489 -0.828394120
## 6492  2.929878426
## 6499  0.276422130
## 6506  0.377807217
## 6511  0.159764355
## 6514 -0.221345230
## 6535  1.097024447
## 6555  1.860161336
## 6563  0.040427436
## 6567  2.852812765
## 6568 -1.339818137
## 6574  1.328168303

```

```
## 6582 -0.610633541
## 6590 -1.502925873
## 6597 -0.196813255
## 6604 -0.007599243
## 6613 -1.875070826
## 6638 -1.800795005
## 6652 -0.766151362
## 6674 -1.464886359
## 6697 3.084478560
## 6699 -1.208034466
## 6707 -2.301511355
## 6728 0.367136917
## 6736 -2.840527636
## 6762 0.576925445
## 6772 -0.154783064
## 6787 -1.922926714
## 6790 -2.370056677
## 6791 1.399037831
## 6792 -2.422115306
## 6793 3.438915605
## 6806 -0.931932160
## 6836 0.366440591
## 6856 1.794787043
## 6863 -1.937740401
## 6865 1.714851920
## 6880 -0.755011197
## 6898 1.397776659
## 6903 1.433607155
## 6919 -1.589625765
## 6931 -0.757892730
## 6953 0.729744001
## 6955 0.110405383
## 6958 -0.148026375
## 6971 -1.195306861
## 6974 -0.537114974
## 6979 -0.035946822
## 7010 -1.585993674
## 7014 0.772023750
## 7023 -1.010155491
## 7030 -0.003612963
## 7033 -0.512349491
## 7050 -0.074070105
## 7064 0.872863317
## 7085 0.783341933
## 7088 1.322524637
## 7091 0.066372736
## 7094 -2.696882416
## 7095 0.958249262
## 7109 1.003858589
## 7112 -0.166083678
## 7118 -1.202898479
## 7127 1.808584704
## 7131 2.553589468
## 7132 1.004126159
```

```
## 7134  1.452385910
## 7137 -0.589226555
## 7155 -1.957727605
## 7160 -0.300839380
## 7169 -0.452165828
## 7177 -0.572074857
## 7182 -3.865603602
## 7192  0.179718374
## 7199  1.009021277
## 7203  0.790527651
## 7208 -0.677582340
## 7209 -2.122695749
## 7210 -1.485549803
## 7220 -0.383753286
## 7224  0.601995348
## 7243  3.508329545
## 7247 -0.265646379
## 7263 -1.097432492
## 7264  0.650054252
## 7266  1.029241406
## 7267  0.580320496
## 7288  0.216734478
## 7296  2.813148544
## 7299 -0.428200224
## 7300  0.241698655
## 7304 -0.618566054
## 7310 -0.251795265
## 7324  0.803466897
## 7327 -0.387096274
## 7331 -2.458198486
## 7334  3.271251886
## 7345 -1.235321207
## 7348 -1.204883308
## 7350 -0.475087182
## 7355 -0.750467429
## 7366 -3.747747186
## 7371 -1.057746275
## 7409  0.398258977
## 7412  1.618480924
## 7419  2.152198062
## 7426 -0.022921502
## 7433 -0.291864685
## 7453 -0.706729518
## 7457  0.546157071
## 7464 -1.307255653
## 7475  0.237396892
## 7477 -0.396897731
## 7482  2.144641446
## 7486 -0.594981392
## 7502  4.070444704
## 7504  0.645732882
## 7510 -2.335501950
## 7518  1.044576263
## 7525  0.768758087
```

```
## 7535  0.409955070
## 7552 -3.352446676
## 7555 -0.072824129
## 7564  3.543178781
## 7583 -0.116772745
## 7586  2.573376450
## 7596  0.272785987
## 7597 -0.344631872
## 7602  0.948820169
## 7607  0.130255440
## 7626  2.235308232
## 7641 -3.516968421
## 7649 -3.158319588
## 7674  2.615764362
## 7678  3.889640980
## 7697 -0.443672499
## 7703  3.268950541
## 7707  0.223553661
## 7721  0.180213606
## 7726 -1.466105388
## 7737  2.581719171
## 7747  1.668823764
## 7752 -2.023478313
## 7767 -0.463449122
## 7774  1.208954136
## 7781  1.401741885
## 7784 -0.199321299
## 7788 -1.396108667
## 7790 -2.421751196
## 7796 -1.421034252
## 7799 -1.665452036
## 7810  1.147845922
## 7813 -0.095345396
## 7826 -0.693624510
## 7830  0.729004618
## 7834 -1.761721791
## 7839 -1.294624179
## 7857 -0.482255789
## 7870  0.865981659
## 7876 -3.612522593
## 7887  1.807621945
## 7904 -1.227364885
## 7910 -3.504051552
## 7913  1.481611635
## 7916 -0.706249863
## 7924 -0.508728205
## 7930  2.801873418
## 7933 -3.748853557
## 7948  2.037446023
## 7968  2.098397722
## 7978  2.253646437
## 7985  0.352213513
## 8025  0.366645200
## 8041 -0.316894198
```

```
## 8047 -0.321546644
## 8050  0.717049360
## 8052  2.098108058
## 8066  1.276912990
## 8070  3.016994915
## 8085 -0.006495634
## 8096 -0.364161404
## 8103  3.121299671
## 8113  0.134641007
## 8115  1.881280429
## 8122  1.519636326
## 8129 -0.198420410
## 8132 -1.346489331
## 8135 -1.682468738
## 8136  0.643481585
## 8138 -1.188974626
## 8140  0.418754259
## 8141  2.008489462
## 8153  1.108637043
## 8164 -0.681735634
## 8170 -2.036966309
## 8173 -1.873308946
## 8188  1.836405526
## 8218  2.704137549
## 8223 -1.042031363
## 8229  1.417268267
## 8230 -0.329317198
## 8232  3.213568597
## 8243  0.469784184
## 8253 -0.061290334
## 8287  3.556697132
## 8312  0.771878870
## 8327  1.172055020
## 8331 -2.004661551
## 8347 -0.148428399
## 8352 -1.286739541
## 8360 -0.442608999
## 8361 -0.442553563
## 8368 -2.363742964
## 8372 -0.021960939
## 8393  1.003025219
## 8395 -0.539229647
## 8403 -0.399060936
## 8410  1.255882005
## 8418  2.565533222
## 8419  0.016354980
## 8433  0.310616541
## 8447 -0.027401188
## 8457 -0.507338413
## 8459 -0.066407428
## 8463 -0.556372305
## 8469 -1.262180194
## 8485  0.032311166
## 8501  0.272608201
```

```

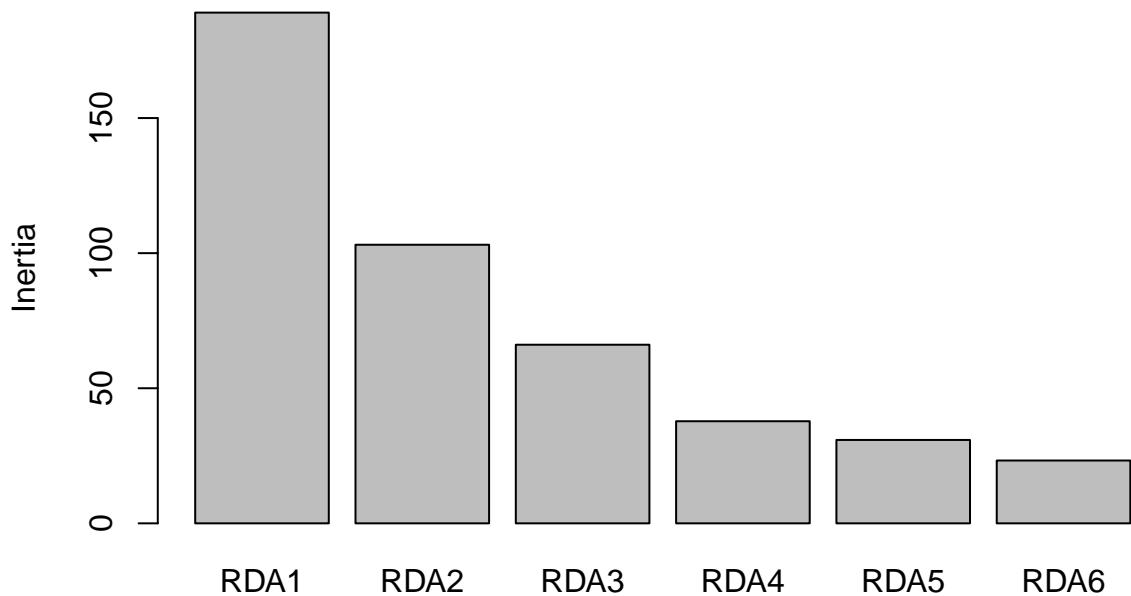
## 8504 3.829947119
## 8510 -0.427137012
## 8517 0.977455524
## 8534 -0.145197319
## 8535 0.820835559
## 8536 1.009254471
## 8537 -0.289686666
## 8548 -1.823315656
## 8560 0.473849713
## 8565 0.708143881
## 8576 4.045267315
## 8581 3.344029516
## 8583 -1.893012652
## 8586 -0.270421554
## 8591 0.648082915
##
## $centroids
## [1] NA
##
## attr(,"const")
## [1] 39.30048

loci.sc <- scores$species
ind.sc <- scores$sites
subset_indPhen_df$RDA1 <- ind.sc[,1]
subset_indPhen_df$RDA2 <- ind.sc[,2]
subset_indPhen_df$RDA3 <- ind.sc[,3]
subset_indPhen_df$RDA4 <- ind.sc[,4]

a<- screeplot(rdaout)

```

rdaout



```

str(a)

## List of 4
## $ x : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y : num [1:6] 189 103.1 66.1 37.8 30.9 ...
## $ xlab: NULL
## $ ylab: NULL
a$y # save this it's the eigenvalues

## [1] 189.02481 103.10740 66.10749 37.79033 30.86247 23.24983

prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.420 0.649 0.796 0.880 0.949 1.001

rdaout$CCA$biplot

##                               RDA1        RDA2        RDA3        RDA4
## subset_indPhen_df$env1_mat -0.5004451  0.01863416 -0.5476147  0.54418964
## subset_indPhen_df$env2_MTWetQ  0.4523477  0.19158505 -0.8296969 -0.11392353
## subset_indPhen_df$env3_MTDQ   -0.7128197 -0.22757653  0.1200761  0.48309488
## subset_indPhen_df$env4_PDM    -0.3843437  0.04904761  0.8297919 -0.24744529
## subset_indPhen_df$env5_PwarmQ  0.6524152  0.56221376  0.4505148  0.02427266
## subset_indPhen_df$env6_PWM     0.3209795 -0.05176393  0.7346369  0.19495732
##                               RDA5        RDA6
## subset_indPhen_df$env1_mat   -0.37298079 -0.1186113
## subset_indPhen_df$env2_MTWetQ  0.03132509 -0.2373183
## subset_indPhen_df$env3_MTDQ    0.33816827 -0.2791780
## subset_indPhen_df$env4_PDM     0.09707124 -0.3011107
## subset_indPhen_df$env5_PwarmQ -0.04630498 -0.2292885
## subset_indPhen_df$env6_PWM      -0.08780176 -0.5557731

enviRDA=unlist(lapply(strsplit(rownames(rdaout$CCA$biplot), "_"), function(x){x[4]}))
phencols <- grep("phenotype", colnames(indPhen_df))

```

Visualize RDA

```

str(subset_indPhen_df)

## 'data.frame': 1000 obs. of 22 variables:
## $ seed : int 892657863 892657863 892657863 892657863 892657863 892657863 892657863 892657863 892657863 892657863 ...
## $ ind_index : int 33 34 44 45 46 64 65 72 85 106 ...
## $ x : num 0.4062 0.4257 0.6717 0.0175 0.0697 ...
## $ y : num 0.233 0.837 0.582 0.33 0.121 ...
## $ phenotype1_mat : num 0.738 -0.2741 -0.6763 -0.2832 0.0576 ...
## $ phenotype2_MTWetQ: num -0.1914 -0.4283 0.0866 -0.4039 -0.3032 ...
## $ phenotype3_MTDQ : num 0.143 -0.0129 -0.4707 -0.3337 0.7316 ...
## $ phenotype4_PDM : num -0.132 0.221 0.219 -0.201 0.196 ...
## $ phenotype5_PwarmQ: num -0.452 0.229 0.26 -0.346 -0.367 ...
## $ phenotype6_PWM : num -0.5417 0.0666 -0.1035 -0.41 0.1963 ...
## $ env1_mat : num 0.762 -0.339 -0.568 -0.246 -0.121 ...
## $ env2_MTWetQ : num -0.1622 -0.4077 0.0909 -0.2008 -0.3064 ...
## $ env3_MTDQ : num 0.2613 -0.0583 -0.4144 -0.2675 0.7029 ...
## $ env4_PDM : num -0.332 0.288 0.235 -0.265 0.211 ...

```

```

##  $ env5_PwarmQ      : num -0.472 0.199 0.23 -0.39 -0.352 ...
##  $ env6_PWM         : num -0.4778 0.0177 -0.0535 -0.459 0.2128 ...
##  $ indID           : int 34 35 45 46 47 65 66 73 86 107 ...
##  $ subset           : logi TRUE TRUE TRUE TRUE TRUE TRUE ...
##  $ RDA1            : num -0.8643 -1.1049 1.8957 0.0926 -0.4219 ...
##  $ RDA2            : num -0.917 2.169 0.279 -1.908 -3.166 ...
##  $ RDA3            : num -0.624 1.484 0.347 -0.206 0.195 ...
##  $ RDA4            : num 0.4282 0.387 -3.3501 0.0107 2.8926 ...

plot_env <- function(i, maintext){
  scalea=2
  subset_indPhen_df$color <- subset_indPhen_df[,phencols[i]]
  p1 <- ggplot(subset_indPhen_df) +
    geom_point(aes(x=RDA1, y = RDA2, col=color)) +
    scale_colour_viridis(breaks=seq(-1,1,0.5))+
    geom_segment(aes(x=0,y=0,
                      xend=rdaout$CCA$biplot[i,1]*scalea,
                      yend=rdaout$CCA$biplot[i,2]*scalea),
                  arrow=arrow(length = unit(0.2,"cm")))+ 
    geom_text(aes(x=rdaout$CCA$biplot[i,1]*scalea,
                  y=rdaout$CCA$biplot[i,2]*scalea,
                  label=enviRDA[i]),
              hjust="right", vjust="bottom") + ggtheme +ggtitle(maintext) +
    labs(color="Stnd.\nEnvi.\nValue")

  p2 <- ggplot(subset_indPhen_df) +
    geom_point(aes(x=RDA3, y = RDA4, col=color)) +
    scale_colour_viridis(breaks=seq(-1,1,0.5))+
    geom_segment(aes(x=0,y=0,
                      xend=rdaout$CCA$biplot[i,3]*scalea,
                      yend=rdaout$CCA$biplot[i,4]*scalea),
                  arrow=arrow(length = unit(0.2,"cm")))+ 
    geom_text(aes(x=rdaout$CCA$biplot[i,3]*scalea,
                  y=rdaout$CCA$biplot[i,4]*scalea,
                  label=enviRDA[i]),
              hjust="right", vjust="bottom") + ggtheme +ggtitle("") +
    labs(color="Stnd.\nEnvi.\nValue")

  grid.arrange(p1,p2, ncol=2)
}

# TO DO OUTPUT TO PDFS

pdf("plots_RDAs.pdf", height=4, width=10)
plot_env(1, "A) MAT")
plot_env(2, "B) MTWetQ")
plot_env(3, "C) MTDQ")
plot_env(4, "D) PDM")
plot_env(5, "E) PwarmQ")
plot_env(6, "F) PWM")
dev.off()

## pdf
## 2

```

Function to Back-calculate RDA trait prediction

```
rdaout$CCA$biplot

##                                     RDA1        RDA2        RDA3        RDA4
## subset_indPhen_df$env1_mat -0.5004451  0.01863416 -0.5476147  0.54418964
## subset_indPhen_df$env2_MTWetQ  0.4523477  0.19158505 -0.8296969 -0.11392353
## subset_indPhen_df$env3_MTDQ   -0.7128197 -0.22757653  0.1200761  0.48309488
## subset_indPhen_df$env4_PDM    -0.3843437  0.04904761  0.8297919 -0.24744529
## subset_indPhen_df$env5_PwarmQ  0.6524152  0.56221376  0.4505148  0.02427266
## subset_indPhen_df$env6_PWM     0.3209795 -0.05176393  0.7346369  0.19495732
##                                     RDA5        RDA6
## subset_indPhen_df$env1_mat   -0.37298079 -0.1186113
## subset_indPhen_df$env2_MTWetQ  0.03132509 -0.2373183
## subset_indPhen_df$env3_MTDQ   0.33816827 -0.2791780
## subset_indPhen_df$env4_PDM    0.09707124 -0.3011107
## subset_indPhen_df$env5_PwarmQ -0.04630498 -0.2292885
## subset_indPhen_df$env6_PWM     -0.08780176 -0.5557731

rda_trait_pred <- function(rdaobj, env_row, K){
  #rdaobj is RDA object
  #envi row is the row of the environment in the biplot output
  #K is the number of RDA axes
  scores <- scores(rdaobj, choices=1:K)
  ind.sc <- scores$sites
  pred <- matrix(NA, nrow=nrow(ind.sc), ncol=K)
  for (k in 1:K){
    pred[,k] <- ind.sc[,k]*eigenvals(rdaobj)[k]*summary(rdaobj)$biplot[env_row,k]
  }
  trait_pred <- scale(rowSums(pred))
  return(trait_pred)
}

newcols <- paste("rda_trait_pred", 1:6, enviRDA, sep="_")

rdaout_pred <- data.frame(matrix(NA,
                                    nrow=nrow(subset_indPhen_df),
                                    ncol=6)
                           )

colnames(rdaout_pred) <- newcols

# Choose 3 RDA axes that explain 75% of the variation
for (i in 1:6){ # hard coding here!!
  rdaout_pred[,i] <- unlist(rda_trait_pred(rdaout, i, 3))
}
subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_pred)
head(subset_indPhen_df)

##      seed ind_index      x      y phenotype1_mat phenotype2_MTWetQ
## 34 892657863      33 0.4061840 0.233272      0.7379670      -0.1914210
## 35 892657863      34 0.4256970 0.837158     -0.2740810      -0.4283320
## 45 892657863      44 0.6716730 0.581744     -0.6763260      0.0866287
## 46 892657863      45 0.0174659 0.329922     -0.2832210      -0.4039420
## 47 892657863      46 0.0697436 0.121221      0.0576163      -0.3032010
```

```

## 65 892657863      64 0.1433610 0.233237      0.2656280      -0.2318730
## phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM env1_mat
## 34      0.142992     -0.131894      -0.452497     -0.5416510  0.762432
## 35     -0.012880      0.221058      0.229296      0.0665969 -0.339330
## 45     -0.470671      0.218813      0.260098     -0.1034650 -0.567733
## 46     -0.333718     -0.200554     -0.345915     -0.4100010 -0.245860
## 47      0.731600      0.195679     -0.367110      0.1962960 -0.121500
## 65      0.214004     -0.239776     -0.517086     -0.2582660  0.103057
## env2_MTWetQ env3_MTDQ env4_PDM env5_PwarmQ env6_PWM indID subset
## 34    -0.1622380   0.2612810  -0.332078     -0.471502 -0.4778210  34  TRUE
## 35    -0.4076670  -0.0582962   0.288030      0.198810  0.0176800  35  TRUE
## 45     0.0909278  -0.4143530   0.234899      0.230255 -0.0535109  45  TRUE
## 46    -0.2007590  -0.2674550  -0.265260     -0.389828 -0.4589790  46  TRUE
## 47    -0.3063790   0.7028580   0.211275     -0.352307  0.2127510  47  TRUE
## 65    -0.2863170   0.1657060  -0.190813     -0.476650 -0.2927740  65  TRUE
## RDA1      RDA2      RDA3      RDA4 rda_trait_pred_1_mat
## 34   -0.86430581 -0.9166130  -0.6236796  0.42815736      0.71113715
## 35   -1.10493855  2.1694436   1.4839047  0.38699170      0.38110458
## 45    1.89569056  0.2790137   0.3473426 -3.35012341     -1.32666788
## 46    0.09261835 -1.9084997  -0.2064070  0.01068788     -0.03435832
## 47   -0.42193942 -3.1656751   0.1950282  2.89261642      0.18559815
## 65   -0.48972800 -2.6743048  -0.4102364  1.53197385      0.38850483
## rda_trait_pred_2_MTWetQ rda_trait_pred_3_MTDQ rda_trait_pred_4_PDM
## 34      -0.4338363      0.7276325      0.196319735
## 35      -0.9983652      0.6003877      1.415511759
## 45      1.1149832     -1.4179971     -0.961392116
## 46     -0.1385528      0.1677459     -0.227134452
## 47     -0.8204453      0.7258162      0.207786435
## 65     -0.5419195      0.6864266     -0.003682457
## rda_trait_pred_5_PwarmQ rda_trait_pred_6_PWM
## 34      -0.9832306     -0.696169112
## 35      0.1857819     -0.058610158
## 45      1.4354370      1.166263029
## 46     -0.5810013      0.051708655
## 47     -1.2668857      0.006861397
## 65     -1.2553170     -0.316284936

```

Compare RDA trait prediction to true trait prediction

```

#TO DO MATRIX FOR BAR GRAPH

RDAbarplot <- matrix(NA, nrow=6, ncol=4)
colnames(RDAbarplot) <- c("RDA", "RDA + nuisance env.", "pRDA - geography", "pRDA - PCs")
rownames(RDAbarplot) <- c("MAT", "MTWetQ", "MTDQ", "PDM", "PwarmQ", "PWM")

RDAbarplot[,1] <- c(
cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rda_trait_pred_1_mat) ,
cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rda_trait_pred_2_MTWetQ) ,
cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rda_trait_pred_3_MTDQ) ,
cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rda_trait_pred_4_PDM) ,
cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rda_trait_pred_5_PwarmQ) ,
cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rda_trait_pred_6_PWM)
)

```

Compare with an RDA conditioned on geographic distance

Check if poor performers are correlated with lat/long

```
rdaout_geo <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
  subset_indPhen_df$env2_MTWetQ +
  subset_indPhen_df$env3_MTDQ +
  subset_indPhen_df$env4_PDM +
  subset_indPhen_df$env5_PwarmQ +
  subset_indPhen_df$env6_PWM +
  Condition(subset_indPhen_df$x + subset_indPhen_df$y)
)

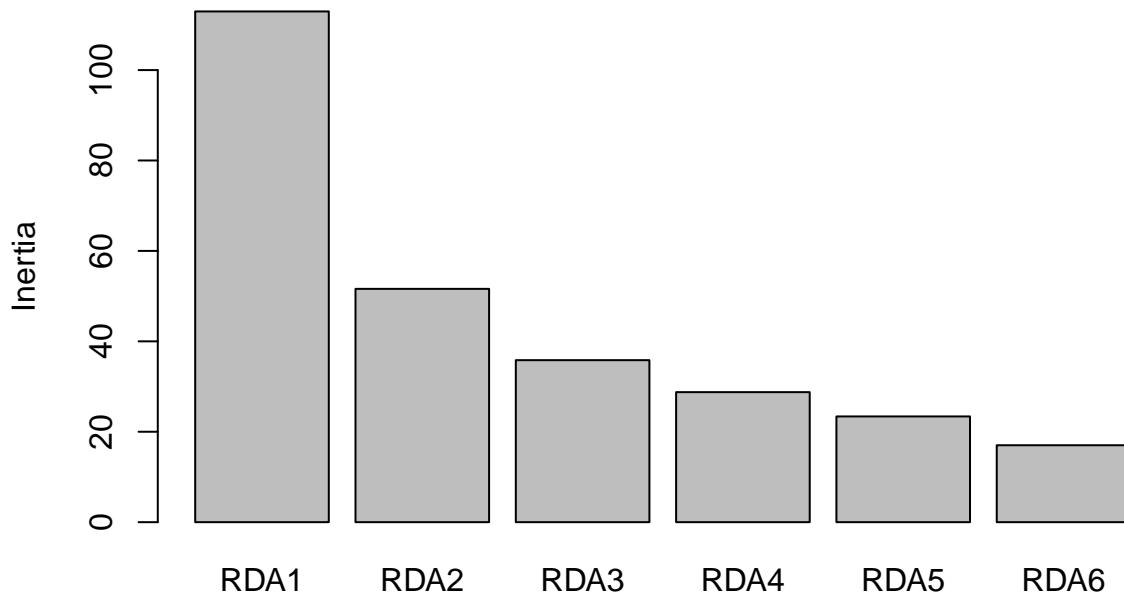
#Make sure the 6 environments correspond to the first 6 rows
summary(rdaout_geo)$biplot

##                                     RDA1      RDA2      RDA3      RDA4
## subset_indPhen_df$env1_mat    0.07702697  0.2642168  0.66800907 -0.1266427
## subset_indPhen_df$env2_MTWetQ  0.68646173  0.5948603  0.02027582  0.1467910
## subset_indPhen_df$env3_MTDQ   -0.33999937 -0.2885079  0.22407096  0.4392573
## subset_indPhen_df$env4_PDM    -0.80045183 -0.3231630 -0.10205407  0.2092156
## subset_indPhen_df$env5_PwarmQ -0.07795504 -0.2199656  0.13909133  0.1562651
## subset_indPhen_df$env6_PWM    -0.22251793 -0.6220827  0.21337431  0.1558425
##                                     RDA5      RDA6
## subset_indPhen_df$env1_mat    -0.28906048  0.33070931
## subset_indPhen_df$env2_MTWetQ  0.05597516  0.20358008
## subset_indPhen_df$env3_MTDQ   -0.21200267  0.32759539
## subset_indPhen_df$env4_PDM    0.40640717 -0.05798559
## subset_indPhen_df$env5_PwarmQ 0.26536052 -0.11892913
## subset_indPhen_df$env6_PWM    0.48760578  0.22651139

enviRDA=unlist(lapply(strsplit(rownames(rdaout_geo$CCA$biplot), "_"), function(x){x[4]}))
rdaout_geo_pred <- data.frame(matrix(NA,
                                         nrow=nrow(subset_indPhen_df),
                                         ncol=6)
)
colnames(rdaout_geo_pred) <- paste("rdageo_trait_pred", 1:6, enviRDA, sep="_")

par(mfrow=c(1,1))
a<- screeplot(rdaout_geo)
```

rdaout_geo



```

str(a)

## List of 4
## $ x   : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y   : num [1:6] 113 51.6 35.8 28.8 23.4 ...
## $ xlab: NULL
## $ ylab: NULL
a$y # save this it's the eigenvalues

## [1] 112.96852 51.60726 35.83495 28.76307 23.38961 17.01966
prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.419 0.610 0.743 0.850 0.937 1.000
for (i in 1:6){ # hard coding here!!
  rdaout_geo_pred[,i] <- unlist(rda_trait_pred(rdaout_geo, i, 3))
}
head(rdaout_geo_pred)

##   rdageo_trait_pred_1_mat rdageo_trait_pred_2_MTWetQ rdageo_trait_pred_3_MTDQ
## 1                  1.265659          0.2122223        0.05191658
## 2                 -1.532662         -1.7891936        1.51704231
## 3                 -1.577245          0.8289867       -1.29831242
## 4                 -1.274725          1.1312103       -1.39281685
## 5                 -1.813448          0.3854716       -0.62334673
## 6                 -1.117529          0.6353088       -0.80838214
##   rdageo_trait_pred_4_PDM rdageo_trait_pred_5_PwarmQ rdageo_trait_pred_6_PWM
## 1                -0.1128385         -0.07459673      -0.2787735
## 2                 1.7652656          1.06983283      1.2927118
## 3                -0.7214945         -1.52423656     -1.1955725
## 4                -1.4469231         -0.38399735     -0.1817642
## 5                -1.0296681          1.06834505      1.2850671

```

```

## 6 -1.0174442 0.28209085 0.4295221
subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_geo_pred)

RDAbarplot[,3] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdageo_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdageo_trait_pred_2_MTWetQ) ,
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdageo_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdageo_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdageo_trait_pred_5_PwarmQ) ,
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdageo_trait_pred_6_PWM)
)

```

Compare with an RDA with extra (nuisance) environmental variables

```

head(ext_env)

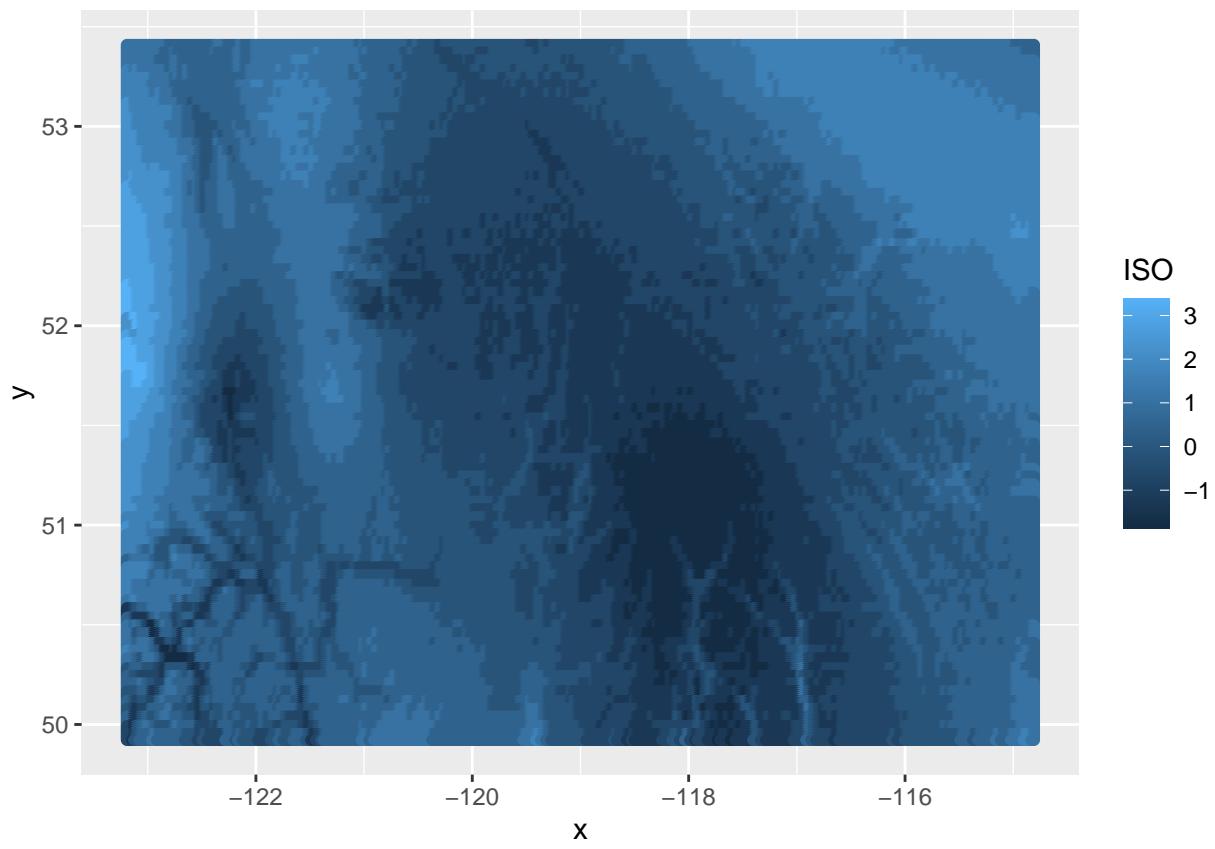
##           x      y      ISO      TSsd      PSsd      slim_x slim_y
## 360 -123.192 53.408 1.047979 1.229545 -0.16971358 0.000000000     1
## 720 -123.169 53.408 1.047979 1.229545 -0.16971358 0.002743648     1
## 1080 -123.145 53.408 1.047979 1.244671 -0.09319581 0.005606585     1
## 1440 -123.122 53.408 1.047979 1.195933 -0.24623135 0.008350233     1
## 1800 -123.099 53.408 1.047979 1.195933 -0.24623135 0.011093880     1
## 2160 -123.075 53.408 1.047979 1.162320 -0.16971358 0.013956817     1

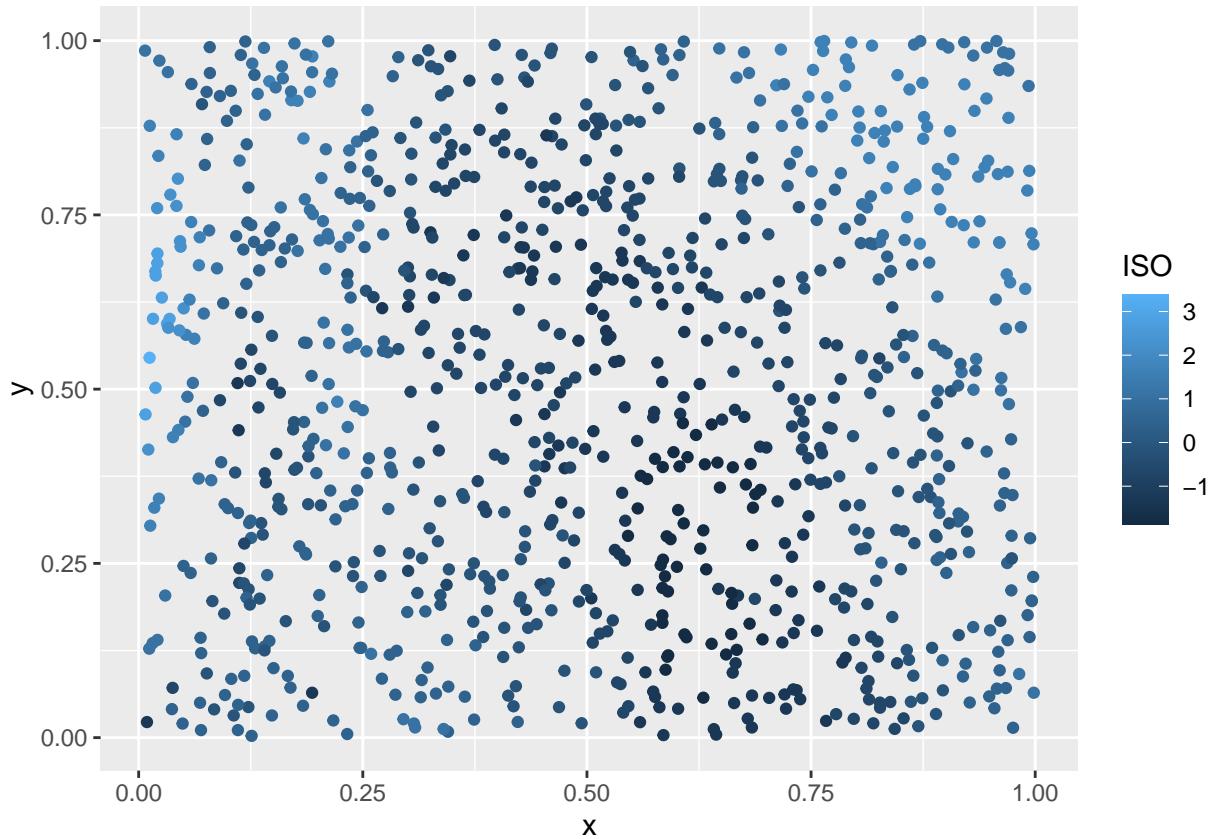
nearest <- nn2(cbind(ext_env$slim_x, ext_env$slim_y),
                 cbind(subset_indPhen_df$x, subset_indPhen_df$y), k=1
)
head(nearest$nn.idx)

##      [,1]
## [1,] 99147
## [2,] 21034
## [3,] 54242
## [4,] 86767
## [5,] 113426
## [6,] 99052

subset_indPhen_df$ISO <- ext_env$ISO[unlist(nearest$nn.idx)]
subset_indPhen_df$TSsd <- ext_env$TSsd[unlist(nearest$nn.idx)]
subset_indPhen_df$PSsd <- ext_env$PSsd[unlist(nearest$nn.idx)]
# sanity check
ggplot(ext_env) + geom_point( aes(x=x,y=y, color=ISO))

```





```

nrow(subset_indPhen_df)

## [1] 1000

rdaout_nuisance <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
  subset_indPhen_df$env2_MTWetQ +
  subset_indPhen_df$env3_MTDQ +
  subset_indPhen_df$env4_PDM +
  subset_indPhen_df$env5_PwarmQ +
  subset_indPhen_df$env6_PWM +
  subset_indPhen_df$ISO +
  subset_indPhen_df$TSsd +
  subset_indPhen_df$PSsd
)
```

#Make sure the 6 environments correspond to the first 6 rows

```
summary(rdaout_nuisance)$biplot
```

| | RDA1 | RDA2 | RDA3 | RDA4 |
|-----------------------------------|------------|-------------|-------------|-------------|
| ## subset_indPhen_df\$env1_mat | -0.4841737 | -0.08542268 | 0.52415981 | -0.19047903 |
| ## subset_indPhen_df\$env2_MTWetQ | 0.4105796 | 0.25620125 | 0.77527941 | 0.31011928 |
| ## subset_indPhen_df\$env3_MTDQ | -0.6635284 | -0.34612035 | -0.07252447 | -0.42391086 |
| ## subset_indPhen_df\$env4_PDM | -0.3618954 | -0.02780810 | -0.81790058 | -0.03818407 |
| ## subset_indPhen_df\$env5_PwarmQ | 0.5851695 | 0.61968501 | -0.39849076 | -0.18059636 |
| ## subset_indPhen_df\$env6_PWM | 0.3263428 | -0.01388219 | -0.65324989 | -0.34196883 |
| ## subset_indPhen_df\$ISO | 0.3183630 | 0.27913342 | 0.67174810 | -0.16274840 |
| ## subset_indPhen_df\$TSsd | 0.4677180 | 0.39870866 | 0.26604537 | 0.11608919 |
| ## subset_indPhen_df\$PSsd | 0.8270525 | -0.02497442 | 0.28433529 | -0.28791998 |

```

##                                     RDA5      RDA6
## subset_indPhen_df$env1_mat     0.46495364 0.3264659
## subset_indPhen_df$env2_MTWetQ  0.03378808 0.1618875
## subset_indPhen_df$env3_MTDQ   -0.09766830 0.2427134
## subset_indPhen_df$env4_PDM    -0.18799625 0.1364502
## subset_indPhen_df$env5_PwarmQ -0.01594835 0.1818523
## subset_indPhen_df$env6_PWM    -0.06449325 0.3270316
## subset_indPhen_df$IS0        -0.37716932 0.2458212
## subset_indPhen_df$TSsd       0.35116955 0.3673550
## subset_indPhen_df$PSsd       0.12424421 0.2626120

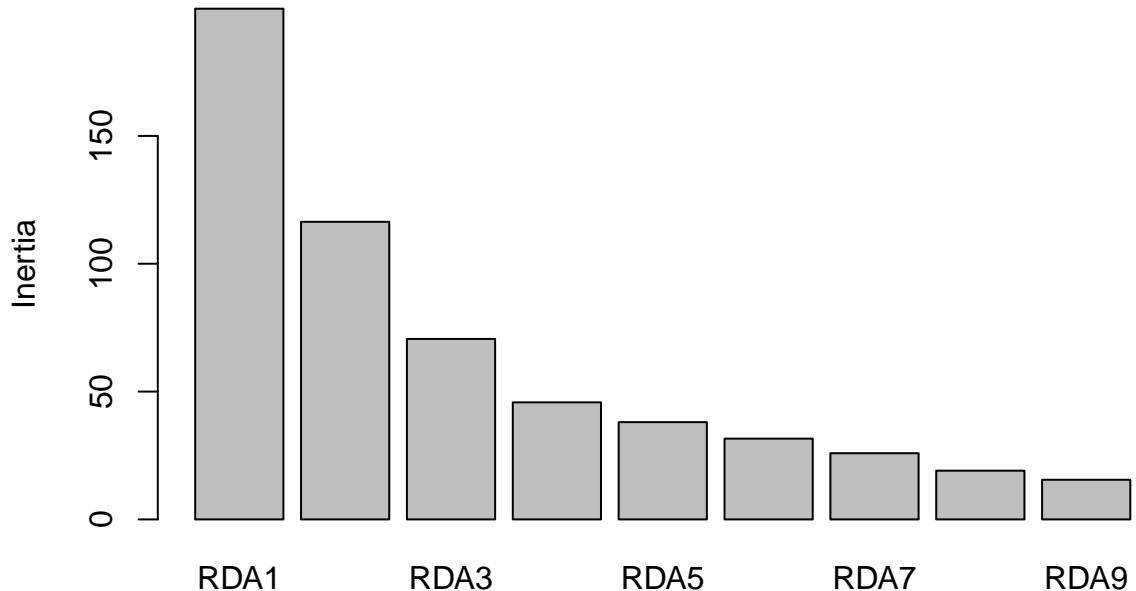
rdaout_nuis_pred <- data.frame(matrix(NA,
                                         nrow=nrow(subset_indPhen_df),
                                         ncol=6)
)
enviRDA=unlist(lapply(strsplit(rownames(rdaout_nuisance$CCA$biplot), "_"), function(x){x[4]}))

colnames(rdaout_nuis_pred)[1:6] <- paste("rdanuis_trait_pred", 1:6, enviRDA[1:6], sep="_")

a<- screeplot(rdaout_nuisance)

```

rdaout_nuisance



```
str(a)
```

```

## List of 4
## $ x   : num [1:9] 0.7 1.9 3.1 4.3 5.5 6.7 7.9 9.1 10.3
## $ y   : num [1:9] 199.8 116.4 70.6 45.8 38.1 ...
## $ xlab: NULL
## $ ylab: NULL
a$y # save this it's the eigenvalues

```

```

## [1] 199.75935 116.40489 70.59256 45.78459 38.05450 31.60225 25.88722
## [8] 19.06714 15.51295

```

```

prop_var <- round(a$y[1:6]/sum(a$y) ,3)
cumsum(prop_var)

## [1] 0.355 0.562 0.687 0.768 0.836 0.892
#could argue to do K=4 here

for (i in 1:6){ # hard coding here!
  rdaout_nuis_pred[,i] <- unlist(rda_trait_pred(rdaout_nuisance, i, 4))
}
head(rdaout_nuis_pred)

##   rdanuis_trait_pred_1_mat rdanuis_trait_pred_2_MTWetQ
## 1          0.6084923      -0.48850524
## 2          0.4491354      -1.02180438
## 3         -1.4364204       1.24265894
## 4          0.1769093      -0.07063134
## 5          0.8207876      -0.82251301
## 6          0.7748457      -0.52743763
##   rdanuis_trait_pred_3_MTDQ rdanuis_trait_pred_4_PDM
## 1          0.6877259      0.2667669
## 2          0.6462775      1.3772785
## 3         -1.5623358     -0.9360098
## 4          0.2656366      -0.3280166
## 5          1.1626054      -0.1237131
## 6          0.9434404      -0.2093697
##   rdanuis_trait_pred_5_PwarmQ rdanuis_trait_pred_6_PWM
## 1          -0.9570092     -0.57886131
## 2          0.1953538      -0.08801275
## 3          1.3851335      0.98984606
## 4          -0.5985907     -0.04442089
## 5          -1.2775622      0.02037090
## 6          -1.2670569     -0.31401065

subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_nuis_pred)

RDAbarplot[,2] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdanuis_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdanuis_trait_pred_2_MTWetQ),
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdanuis_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdanuis_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdanuis_trait_pred_5_PwarmQ),
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdanuis_trait_pred_6_PWM)
)

```

PCA

```

lfmmfile <- paste0(seed, "_genotypes.lfmm")
write.lfmm(t(G_full_subset), lfmmfile)

## [1] "892657863_genotypes.lfmm"
#dim(rbind(subset_indPhen_df$ind_index, t(G_full_subset)))

pc = pca(lfmmfile, 20, scale = TRUE)

```

```

## [1] "*****"
## [1] " Principal Component Analysis "
## [1] "*****"
## summary of the options:
##
##      -n (number of individuals)      1000
##      -L (number of loci)            26371
##      -K (number of principal components) 20
##      -x (genotype file)           /Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.pca
##      -a (eigenvalue file)          /Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.eigenvalues
##      -e (eigenvector file)         /Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.eigenvectors
##      -d (standard deviation file)  /Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.sdev
##      -p (projection file)          /Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.projections
##      -s data centered and scaled

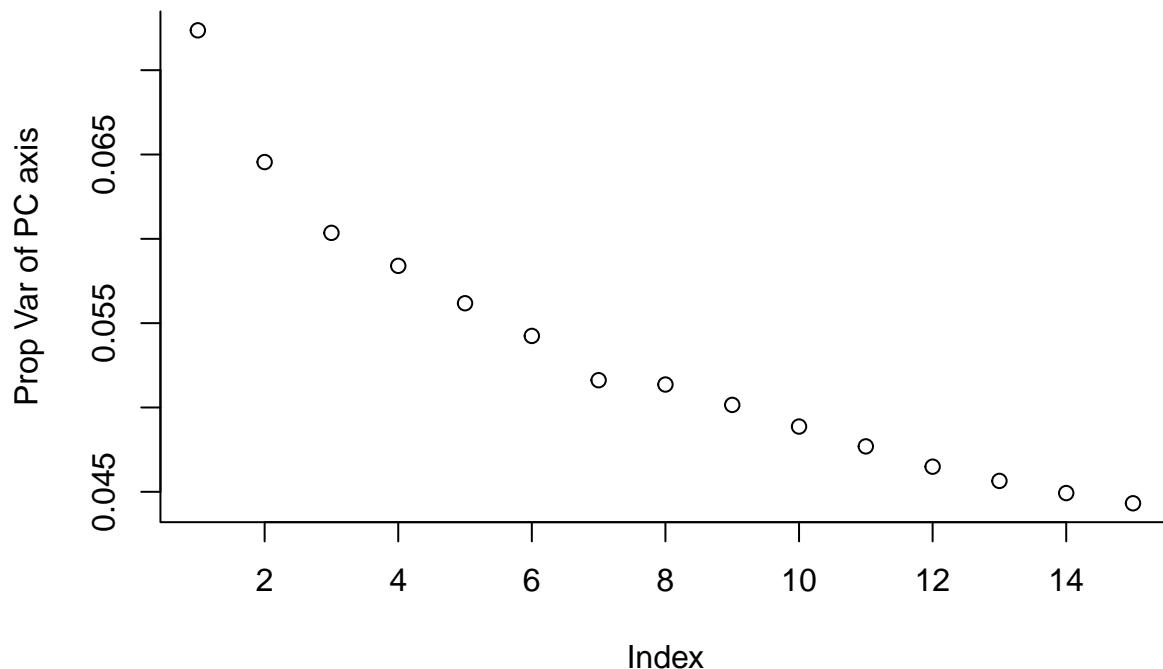
#saveRDS(pc,paste0(path, seed, "_pca.RDS"))
print("calculated pca")

## [1] "calculated pca"
str(pc)

## Formal class 'pcaProject' [package "LEA"] with 13 slots
##   ..@ projDir      : chr "/Users/lotterhos/Documents/GitHub/MVP-NonCinalAF/multipheno_multienvironmental/892657863_genotypes.pca"
##   ..@ pcaDir       : chr "892657863_genotypes.pca"
##   ..@ n            : int 1000
##   ..@ L            : int 26371
##   ..@ K            : int 20
##   ..@ center       : logi TRUE
##   ..@ scale        : logi TRUE
##   ..@ pcaProject.file : chr "892657863_genotypes.pcaProject"
##   ..@ input.file   : chr "892657863_genotypes.lfmm"
##   ..@ eigenvalue.file : chr "892657863_genotypes.eigenvalues"
##   ..@ eigenvector.file: chr "892657863_genotypes.eigenvectors"
##   ..@ sdev.file    : chr "892657863_genotypes.sdev"
##   ..@ projection.file : chr "892657863_genotypes.projections"

subset_indPhen_df$PC1 <- pc$projections[,1]
subset_indPhen_df$PC2 <- pc$projections[,2]
subset_indPhen_df$PC3 <- pc$projections[,3]
propvarpc <- pc$sdev[1:15]/sum(pc$sdev)
plot(propvarpc, bty="l", ylab="Prop Var of PC axis",
     main=paste0(plotmain, "; K=", 20), cex.main=0.5)

```



```

pdf("plots_PCA.pdf", width=5, height=4)
ggplot(subset_indPhen_df) + geom_point(aes(x=PC1, y=PC2, color=x), size=5) +
  scale_color_viridis(option="magma") +
  geom_point(aes(x=PC1, y=PC2, fill=y), size=2, pch=21) + ggtheme +
  scale_fill_viridis(option="mako")
dev.off()

## pdf
## 2

```

Compare with an RDA conditioned on PC axes

```

rdaout_PC <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
  subset_indPhen_df$env2_MTWetQ +
  subset_indPhen_df$env3_MTDQ +
  subset_indPhen_df$env4_PDM +
  subset_indPhen_df$env5_PwarmQ +
  subset_indPhen_df$env6_PWM +
  Condition(subset_indPhen_df$PC1 + subset_indPhen_df$PC2)
)

```

```

#Make sure the 6 environments correspond to the first 6 rows
summary(rdaout_PC)$biplot

```

| | RDA1 | RDA2 | RDA3 | RDA4 |
|-----------------------------------|------------|-------------|-------------|-------------|
| ## subset_indPhen_df\$env1_mat | -0.5245376 | -0.02602815 | 0.53762964 | -0.03502722 |
| ## subset_indPhen_df\$env2_MTWetQ | 0.8355882 | -0.10039282 | -0.17111890 | 0.16471284 |
| ## subset_indPhen_df\$env3_MTDQ | 0.1598580 | 0.36303218 | 0.33114690 | 0.47960365 |
| ## subset_indPhen_df\$env4_PDM | 0.8539226 | -0.17647528 | -0.15941117 | 0.23489663 |
| ## subset_indPhen_df\$env5_PwarmQ | 0.4164786 | -0.35392980 | 0.09531554 | 0.19306406 |

```

## subset_indPhen_df$env6_PWM      0.6698288 -0.06505497  0.33098469  0.24950964
##                                         RDA5          RDA6
## subset_indPhen_df$env1_mat     -0.03389235 -0.488585809
## subset_indPhen_df$env2_MTWetQ  0.17138814 -0.041821956
## subset_indPhen_df$env3_MTDQ   -0.04034418 -0.220134703
## subset_indPhen_df$env4_PDM    0.19600377 -0.007685675
## subset_indPhen_df$env5_PwarmQ 0.13994570  0.099504427
## subset_indPhen_df$env6_PWM    0.52471022  0.049321000

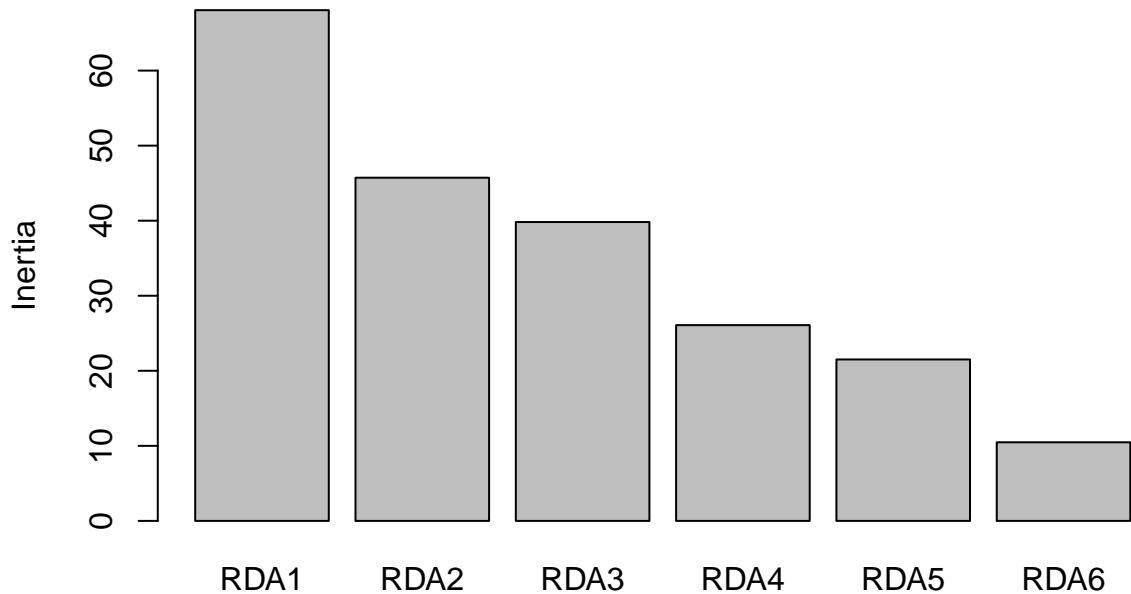
enviRDA=unlist(lapply(strsplit(rownames(rdaout_PC$CCA$biplot), " "), function(x){x[4]}))

rdaout_pc_pred <- data.frame(matrix(NA,
                                      nrow=nrow(subset_indPhen_df),
                                      ncol=6))
)
colnames(rdaout_pc_pred) <- paste("rdapc_trait_pred", 1:6, enviRDA, sep="_")

a<- screeplot(rdaout_PC)

```

rdaout_PC



```
str(a)
```

```

## List of 4
## $ x  : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y  : num [1:6] 68.1 45.7 39.8 26.1 21.5 ...
## $ xlab: NULL
## $ ylab: NULL

a$y # save this it's the eigenvalues

## [1] 68.05155 45.72809 39.82016 26.08374 21.50990 10.47522
prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.322 0.538 0.726 0.849 0.951 1.000

```

```

for (i in 1:6){ # hard coding here!!
  rdaout_pc_pred[,i] <- unlist(rda_trait_pred(rdaout_PC, i, 3))
}
head(rdaout_pc_pred)

##   rdapc_trait_pred_1_mat rdapc_trait_pred_2_MTWetQ rdapc_trait_pred_3_MTDQ
## 1          0.88799537      0.51204838     -0.3994751
## 2         -1.26072461     -1.36012051      0.8169536
## 3        -1.98748441     -0.12348776     -1.1113356
## 4         0.08886399      0.14199912      0.7654236
## 5         0.11644354     -0.64282865      3.3399573
## 6         0.45251146      0.04301893     1.7590482
##   rdapc_trait_pred_4_PDM rdapc_trait_pred_5_PwarmQ rdapc_trait_pred_6_PWM
## 1        -0.4898052       0.07987374    -0.2309161
## 2         1.2658767       0.82945601    1.1936669
## 3         0.7224157     -0.20814359    -0.4676039
## 4        -0.4182877     -0.91134576    -0.3645721
## 5        -0.4881793     -1.83352153      0.1364665
## 6        -0.6946252     -1.38421794    -0.3045637

subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_pc_pred)

RDAbarplot

##           RDA RDA + nuisance env. pRDA - geography pRDA - PCs
## MAT      0.6461756      0.6531884      0.5949827      NA
## MTWetQ  0.8066352      0.8042168      0.7933902      NA
## MTDQ    0.7152864      0.7511792      0.4388215      NA
## PDM     0.7366390      0.7343335      0.7633153      NA
## PwarmQ 0.8571310      0.8535961      0.2527603      NA
## PWM     0.6190757      0.6315349      0.6415677      NA

RDAbarplot[,4] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdapc_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdapc_trait_pred_2_MTWetQ) ,
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdapc_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdapc_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdapc_trait_pred_5_PwarmQ) ,
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdapc_trait_pred_6_PWM)
)

head(subset_indPhen_df)

##           seed ind_index      x      y phenotype1_mat phenotype2_MTWetQ
## 34 892657863      33 0.4061840 0.233272      0.7379670     -0.1914210
## 35 892657863      34 0.4256970 0.837158     -0.2740810     -0.4283320
## 45 892657863      44 0.6716730 0.581744     -0.6763260      0.0866287
## 46 892657863      45 0.0174659 0.329922     -0.2832210     -0.4039420
## 47 892657863      46 0.0697436 0.121221      0.0576163     -0.3032010
## 65 892657863      64 0.1433610 0.233237      0.2656280     -0.2318730
## phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM env1_mat
## 34      0.142992     -0.131894      -0.452497     -0.5416510  0.762432
## 35     -0.012880      0.221058      0.229296      0.0665969 -0.339330
## 45     -0.470671      0.218813      0.260098     -0.1034650 -0.567733
## 46     -0.333718     -0.200554     -0.345915     -0.4100010 -0.245860

```

```

## 47      0.731600      0.195679      -0.367110      0.1962960 -0.121500
## 65      0.214004     -0.239776      -0.517086     -0.2582660  0.103057
##   env2_MTWetQ  env3_MTDQ  env4_PDM env5_PwarmQ  env6_PWM indID subset
## 34     -0.1622380  0.2612810 -0.332078     -0.471502 -0.4778210    34  TRUE
## 35     -0.4076670 -0.0582962  0.288030      0.198810  0.0176800    35  TRUE
## 45      0.0909278 -0.4143530  0.234899      0.230255 -0.0535109    45  TRUE
## 46     -0.2007590 -0.2674550 -0.265260     -0.389828 -0.4589790    46  TRUE
## 47     -0.3063790  0.7028580  0.211275     -0.352307  0.2127510    47  TRUE
## 65     -0.2863170  0.1657060 -0.190813     -0.476650 -0.2927740    65  TRUE
##       RDA1        RDA2        RDA3        RDA4 rda_trait_pred_1_mat
## 34     -0.86430581 -0.9166130 -0.6236796  0.42815736      0.71113715
## 35     -1.10493855  2.1694436  1.4839047  0.38699170      0.38110458
## 45      1.89569056  0.2790137  0.3473426 -3.35012341     -1.32666788
## 46      0.09261835 -1.9084997 -0.2064070  0.01068788     -0.03435832
## 47     -0.42193942 -3.1656751  0.1950282  2.89261642      0.18559815
## 65     -0.48972800 -2.6743048 -0.4102364  1.53197385      0.38850483
##   rda_trait_pred_2_MTWetQ rda_trait_pred_3_MTDQ rda_trait_pred_4_PDM
## 34      -0.4338363      0.7276325      0.196319735
## 35      -0.9983652      0.6003877      1.415511759
## 45      1.1149832     -1.4179971     -0.961392116
## 46      -0.1385528      0.1677459     -0.227134452
## 47      -0.8204453      0.7258162      0.207786435
## 65      -0.5419195      0.6864266     -0.003682457
##   rda_trait_pred_5_PwarmQ rda_trait_pred_6_PWM rdageo_trait_pred_1_mat
## 34      -0.9832306     -0.696169112      1.265659
## 35      0.1857819     -0.058610158     -1.532662
## 45      1.4354370      1.166263029     -1.577245
## 46      -0.5810013      0.051708655     -1.274725
## 47      -1.2668857      0.006861397     -1.813448
## 65      -1.2553170     -0.316284936     -1.117529
##   rdageo_trait_pred_2_MTWetQ rdageo_trait_pred_3_MTDQ rdageo_trait_pred_4_PDM
## 34      0.2122223      0.05191658     -0.1128385
## 35      -1.7891936      1.51704231      1.7652656
## 45      0.8289867     -1.29831242     -0.7214945
## 46      1.1312103     -1.39281685     -1.4469231
## 47      0.3854716     -0.62334673     -1.0296681
## 65      0.6353088     -0.80838214     -1.0174442
##   rdageo_trait_pred_5_PwarmQ rdageo_trait_pred_6_PWM      ISO      TSsd
## 34      -0.07459673    -0.2787735 -0.1204440  0.7690523
## 35      1.06983283     1.2927118 -0.7046553 -0.9250244
## 45      -1.52423656    -1.1955725 -0.7046553 -0.7821707
## 46      -0.38399735    -0.1817642  1.6321899 -1.4477009
## 47      1.06834505     1.2850671  0.4637673 -2.1014666
## 65      0.28209085     0.4295221  0.4637673 -1.3821563
##       PSsd rdanuis_trait_pred_1_mat rdanuis_trait_pred_2_MTWetQ
## 34     -0.5523024      0.6084923     -0.48850524
## 35     -1.0114091      0.4491354     -1.02180438
## 45     -0.7818557     -1.4364204      1.24265894
## 46     -0.4757847      0.1769093     -0.07063134
## 47      0.2128753      0.8207876     -0.82251301
## 65     -0.4757847      0.7748457     -0.52743763
##   rdanuis_trait_pred_3_MTDQ rdanuis_trait_pred_4_PDM
## 34      0.6877259      0.2667669
## 35      0.6462775      1.3772785

```

```

## 45          -1.5623358      -0.9360098
## 46           0.2656366     -0.3280166
## 47           1.1626054     -0.1237131
## 65           0.9434404     -0.2093697
##   rdanuis_trait_pred_5_PwarmQ rdanuis_trait_pred_6_PWM      PC1      PC2
## 34            -0.9570092    -0.57886131   9.029300 -27.7954
## 35             0.1953538    -0.08801275  34.415600 35.0493
## 45             1.3851335     0.98984606 -38.264700 20.2608
## 46            -0.5985907    -0.04442089 -3.625160 -20.9956
## 47            -1.2775622     0.02037090  0.371336 -31.5880
## 65            -1.2670569    -0.31401065  1.326080 -38.0916
##   PC3 rdapc_trait_pred_1_mat rdapc_trait_pred_2_MTWetQ
## 34  -0.167126       0.88799537      0.51204838
## 35 -48.397000      -1.26072461     -1.36012051
## 45  -7.927330      -1.98748441     -0.12348776
## 46   9.732080       0.08886399      0.14199912
## 47   8.717150       0.11644354     -0.64282865
## 65  16.684200       0.45251146      0.04301893
##   rdapc_trait_pred_3_MTDQ rdapc_trait_pred_4_PDM rdapc_trait_pred_5_PwarmQ
## 34            -0.3994751    -0.4898052      0.07987374
## 35             0.8169536     1.2658767      0.82945601
## 45            -1.1113356     0.7224157     -0.20814359
## 46             0.7654236    -0.4182877     -0.91134576
## 47             3.3399573    -0.4881793     -1.83352153
## 65             1.7590482    -0.6946252     -1.38421794
##   rdapc_trait_pred_6_PWM
## 34            -0.2309161
## 35             1.1936669
## 45            -0.4676039
## 46            -0.3645721
## 47             0.1364665
## 65            -0.3045637

forcor <- subset_indPhen_df[,c(
  which(colnames(subset_indPhen_df)=="x"),
  which(colnames(subset_indPhen_df)=="y"),
  grep("PC1", colnames(subset_indPhen_df)),
  grep("PC2", colnames(subset_indPhen_df)),
  grep("env", colnames(subset_indPhen_df))
)
]
]

pdf("plots_env_PCCors.pdf", width=7, height=5)
  corrplot(abs(cor(forcor)), type = "upper")
dev.off()

## pdf
## 2

```

RDAbarplot

```

colrs <- c(rocket(2, begin=0, end=0.3), rocket(2, begin=0.9, end=1.0))

pdf("plots_RDApred.pdf", width=6, height=6)

```

```
par(mar=c(5,5,1,1))
  barplot(t(RDAbarplot), beside = TRUE, las=2, ylim=c(0,1.05), ylab="Cor(RDA-predicted trait value,\nngre
  legend(1.0,1.05,colnames(RDAbarplot), bty="n", fill= colrs)
dev.off()

## pdf
##    2
```