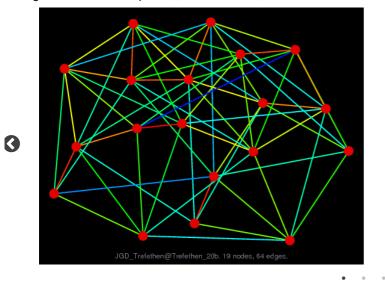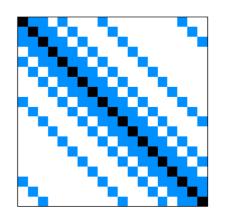# JGD_Trefethen/Trefethen_20b

Diagonal matrices with primes, Nick Trefethen, Oxford Univ.

JGD_Trefethen@Trefethen_20b. 19 nodes, 64 edges.

● ● ●

Name	Trefethen_20b
Group	JGD_Trefethen (/JGD_Trefethen)
Matrix ID	2203
Num Rows ❓	19
Num Cols ❓	19
Nonzeros ❓	147
Kind ❓	Combinatorial Problem
Symmetric ❓	Yes
Date ❓	2008
Author ❓	N. Trefethen
Editor ❓	J.-G. Dumas

Structural Rank	19
Structural Rank Full	true
Num Dmperm Blocks ❓	1
Strongly Connect Components ❓	1
Num Explicit Zeros ❓	0
Pattern Symmetry ❓	100%
Numeric Symmetry ❓	100%
Cholesky Candidate ❓	yes
Positive Definite ❓	yes
Type ❓	integer

Matrix Norm	7.151240e+01
Minimum Singular Value	2.356147e+00
Condition Number	3.035142e+01
Rank	19
sprank(A)-rank(A)	0
Null Space Dimension	0
Full Numerical Rank?	yes
Download Singular Values	MATLAB ⬇ (https://sparse.tamu.edu/svd/JGD_Trefethen/Trefethen_20b_SVD.mat)

Download

MATLAB ⬇ (https://sparse.tamu.edu/mat/JGD_Trefethen/Trefethen_20b.mat)

Rutherford Boeing ⬇ (https://sparse.tamu.edu/RB/JGD_Trefethen/Trefethen_20b.tar.gz)

Matrix Market ⬇ (https://sparse.tamu.edu/MM/JGD_Trefethen/Trefethen_20b.tar.gz)

Notes

```
Diagonal matrices with primes, Nick Trefethen, Oxford Univ.
From Jean-Guillaume Dumas' Sparse Integer Matrix Collection,
http://ljk.imag.fr/membres/Jean-Guillaume.Dumas/simc.html

Problem 7 of the Hundred-dollar, Hundred-digit Challenge Problems,
SIAM News, vol 35, no. 1.

7. Let A be the 20,000 x 20,000 matrix whose entries are zero
everywhere except for the primes 2, 3, 5, 7, . . . , 224737 along the
main diagonal and the number 1 in all the positions A(i,j) with
|i-j| = 1,2,4,8, . . . ,16384.  What is the (1,1) entry of inv(A)?

http://www.siam.org/news/news.php?id=388

Filename in JGD collection: Trefethen/trefethen_20__19_minor.sms
```