```
(v1 + v2 + v3 + v4) ^ 2
```

$$(v1 + v2 + v3 + v4)^2$$

```
Expand [%]
```

$$v1^2 + 2\ v1\ v2 + v2^2 + 2\ v1\ v3 + 2\ v2\ v3 + v3^2 + 2\ v1\ v4 + 2\ v2\ v4 + 2\ v3\ v4 + v4^2$$

```
A =
 Normal[SparseArray[{{1, 2} → 1, {1, 5} → 1, {2, 3} → 1, {2, 1} → 1, {2, 6} → 1, {3, 2} → 1,
    {3, 4} → 1, {3, 7} → 1, {4, 3} → 1, {4, 8} → 1, {5, 1} → 1, {5, 6} → 1, {5, 9} → 1,
    {6, 5} → 1, {6, 2} → 1, {6, 7} → 1, {6, 10} → 1, {7, 6} → 1, {7, 8} → 1, {7, 3} → 1,
    {7, 11} → 1, {8, 7} → 1, {8, 4} → 1, {8, 12} → 1, {9, 5} → 1, {9, 10} → 1,
    {9, 13} → 1, {10, 9} → 1, {10, 11} → 1, {10, 6} → 1, {10, 14} → 1, {11, 10} → 1,
    {11, 7} → 1, {11, 12} → 1, {11, 15} → 1, {12, 11} → 1, {12, 8} → 1, {12, 16} → 1,
    {13, 9} → 1, {13, 14} → 1, {14, 13} → 1, {14, 10} → 1, {14, 15} → 1, {15, 14} → 1,
    {15, 16} → 1, {15, 11} → 1, {16, 15} → 1, {16, 12} → 1}]]; MatrixForm[A]
```

$$\begin{pmatrix}
0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0
\end{pmatrix}$$

```
Sqrt[1600]
```

$$40$$

```
Asd = RandomReal[{0, 1}, {1600, 1600}];
```

```
Asd
```

A very large output was generated. Here is a sample of it:

```
{{0.443044, 0.125379, 0.676715, 0.0185202, 0.757218,
  0.997575, 0.846332, 0.257406, 0.491943, 0.0383646, 0.935252,
  <<1578>>, 0.808781, 0.851746, 0.31386, 0.215227, 0.611776, 0.603149,
  0.862599, 0.472513, 0.947514, 0.784073, 0.160894}, <<1598>>, {<<1>>}}
```

Show Less | Show More | Show Full Output | Set Size Limit...

```
Inverse[Asd]
```

A very large output was generated. Here is a sample of it:

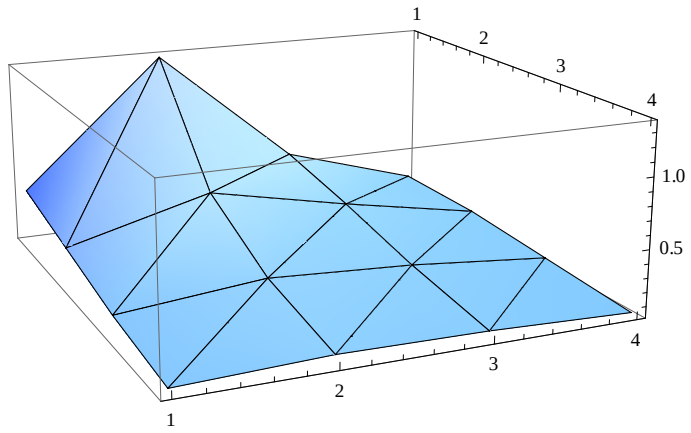
```
{{-0.13517, 0.0891548, -0.334106, -0.287463, -0.594927, 0.0750318, 1.0081, -0.918739,
  -0.136028, -0.441428, -0.160221, <<1579>>, -0.0115129, 0.183924, 0.107806, 0.286093,
  0.164087, 0.388633, -0.314199, -0.0790362, -0.260685, -0.383224}, <<1598>>, {<<1>>}}
```

Show Less | Show More | Show Full Output | Set Size Limit...

```
B = Inverse[IdentityMatrix[16] - A / 4][[2]]
```

$$\left\{\frac{337}{825}, \frac{373}{275}, \frac{127}{275}, \frac{251}{1650}, \frac{229}{825}, \frac{458}{825}, \frac{559}{1650}, \frac{11}{75}, \frac{11}{75}, \frac{409}{1650}, \frac{158}{825}, \frac{79}{825}, \frac{101}{1650}, \frac{27}{275}, \frac{23}{275}, \frac{37}{825}\right\}$$

```
ListPlot3D[Flatten[Table[{i, j, B[[(i - 1) * 4 + j]]}, {i, 4}, {j, 4}], 1],
 Mesh → All, PlotRange → All]
```




```
B = RandomReal[{0, 1}, {16}]
```

```
{0.347134, 0.942539, 0.304382, 0.249019, 0.714838, 0.0334383, 0.708347, 0.107021,
 0.680583, 0.283245, 0.110574, 0.641231, 0.354968, 0.0250317, 0.438023, 0.431178}
```

```
B = Normal[SparseArray[{{9} → 1}, {16}]]
```

```
{0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0}
```

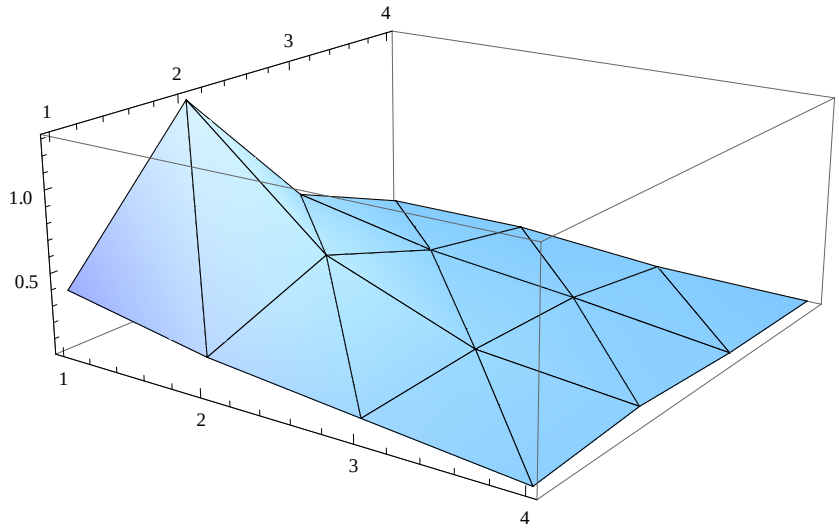
```
A . B / 4
```

$$\left\{0, 0, 0, 0, \frac{1}{4}, 0, 0, 0, 0, \frac{1}{4}, 0, 0, \frac{1}{4}, 0, 0, 0\right\}$$

```
B = A.B / 4 + Normal[SparseArray[{{4} → 1}, {16}]]
```

$$\left\{\frac{493\,287\,954\,057\,203\,743\,604\,714\,818\,765}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304}, 0, \frac{798\,156\,676\,371\,113\,536\,129\,883\,718\,203}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304},\right.$$
$$1, 0, \frac{1\,291\,444\,629\,962\,655\,992\,426\,859\,279\,155}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304}, 0,$$
$$\frac{798\,156\,676\,371\,113\,536\,129\,883\,718\,203}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304}, \frac{399\,078\,337\,719\,895\,480\,757\,202\,601\,289}{2\,658\,455\,991\,569\,831\,745\,807\,614\,120\,560\,689\,152},$$
$$0, \frac{1\,291\,444\,629\,962\,655\,992\,426\,859\,279\,155}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304}, 0, 0,$$
$$\left.\frac{399\,078\,337\,719\,895\,480\,757\,202\,601\,289}{2\,658\,455\,991\,569\,831\,745\,807\,614\,120\,560\,689\,152}, 0, \frac{493\,287\,954\,057\,203\,743\,604\,714\,818\,765}{5\,316\,911\,983\,139\,663\,491\,615\,228\,241\,121\,378\,304}\right\}$$

```
B = A.B / 4 + Normal[SparseArray[{{2} → 1}, {16}]];
ListPlot3D[Flatten[Table[{i, j, B[[(i - 1) * 4 + j]]}, {i, 4}, {j, 4}], 1],
 Mesh → All, PlotRange → All]
```




```
3
```