```
c = RandomReal[1, {3, 3}];
b = c.DiagonalMatrix[{1, 3, 4}].Inverse[c];
b // MatrixForm
```

$$\begin{pmatrix} -7.74484 & -2.44801 & 8.1429 \\ -10.1311 & 1.09747 & 7.54148 \\ -15.6334 & -2.96575 & 14.6474 \end{pmatrix}$$

```
Eigenvalues[b]
```

```
{4., 3., 1.}
```

CholeskyDecomposition

Spar

```
RandomReal[1, {3, 3}]
```

```
{{0.491527, 0.153946, 0.641775},
 {0.677622, 0.767405, 0.392646}, {0.433624, 0.542714, 0.764404}}
```

```
Band[{h, h}] → RandomInteger[1, {m, m}]
```

```
RandomInteger::array :
  The array dimensions {m, m} given in position 2 of RandomInteger[1, {m, m}] should be a
    list of non-negative machine-sized integers giving the dimensions for the result. >>
```

```
Band[{h, h}] → RandomInteger[1, {m, m}]
```

```
m = 5
```

```
5
```

```
h = 10;
```

```
n = 5
```

```
5
```

```
s = SparseArray[{Band[{1, 1}] → RandomReal[1, n], Band[{1, 2}] → RandomReal[1, n - 1],
    Band[{2, 1}] → RandomReal[1, n - 1]}, {n, n}]; s // MatrixForm
```

$$\begin{pmatrix} 0.243373 & 0.864908 & 0 & 0 & 0 \\ 0.036862 & 0.469975 & 0.916066 & 0 & 0 \\ 0 & 0.670196 & 0.498051 & 0.478027 & 0 \\ 0 & 0 & 0.99485 & 0.559122 & 0.117142 \\ 0 & 0 & 0 & 0.525559 & 0.377538 \end{pmatrix}$$