```
> with(LinearAlgebra);
```

[*&x*, *Add*, *Adjoint*, *BackwardSubstitute*, *BandMatrix*, *Basis*, *BezoutMatrix*, *BidiagonalForm*, *BilinearForm*, *CARE*, *CharacteristicMatrix*, *CharacteristicPolynomial*, *Column*, *ColumnDimension*, *ColumnOperation*, *ColumnSpace*, *CompanionMatrix*, *CompressedSparseForm*, *ConditionNumber*, *ConstantMatrix*, *ConstantVector*, *Copy*, *CreatePermutation*, *CrossProduct*, *DARE*, *DeleteColumn*, *DeleteRow*, *Determinant*, *Diagonal*, *DiagonalMatrix*, *Dimension*, *Dimensions*, *DotProduct*, *EigenConditionNumbers*, *Eigenvalues*, *Eigenvectors*, *Equal*, *ForwardSubstitute*, *FrobeniusForm*, *FromCompressedSparseForm*, *FromSplitForm*, *GaussianElimination*, *GenerateEquations*, *GenerateMatrix*, *Generic*, *GetResultDataType*, *GetResultShape*, *GivensRotationMatrix*, *GramSchmidt*, *HankelMatrix*, *HermiteForm*, *HermitianTranspose*, *HessenbergForm*, *HilbertMatrix*, *HouseholderMatrix*, *IdentityMatrix*, *IntersectionBasis*, *IsDefinite*, *IsOrthogonal*, *IsSimilar*, *IsUnitary*, *JordanBlockMatrix*, *JordanForm*, *KroneckerProduct*, *LA_Main*, *LUDecomposition*, *LeastSquares*, *LinearSolve*, *LyapunovSolve*, *Map*, *Map2*, *MatrixAdd*, *MatrixExponential*, *MatrixFunction*, *MatrixInverse*, *MatrixMatrixMultiply*, *MatrixNorm*, *MatrixPower*, *MatrixScalarMultiply*, *MatrixVectorMultiply*, *MinimalPolynomial*, *Minor*, *Modular*, *Multiply*, *NoUserValue*, *Norm*, *Normalize*, *NullSpace*, *OuterProductMatrix*, *Permanent*, *Pivot*, *PopovForm*, *ProjectionMatrix*, *QRDecomposition*, *RandomMatrix*, *RandomVector*, *Rank*, *RationalCanonicalForm*, *ReducedRowEchelonForm*, *Row*, *RowDimension*, *RowOperation*, *RowSpace*, *ScalarMatrix*, *ScalarMultiply*, *ScalarVector*, *SchurForm*, *SingularValues*, *SmithForm*, *SplitForm*, *StronglyConnectedBlocks*, *SubMatrix*, *SubVector*, *SumBasis*, *SylvesterMatrix*, *SylvesterSolve*, *ToeplitzMatrix*, *Trace*, *Transpose*, *TridiagonalForm*, *UnitVector*, *VandermondeMatrix*, *VectorAdd*, *VectorAngle*, *VectorMatrixMultiply*, *VectorNorm*, *VectorScalarMultiply*, *ZeroMatrix*, *ZeroVector*, *Zip*] **(1)**

```
> A:=LinearAlgebra['RandomMatrix'](20,20); Norm(A,'Frobenius');
  Determinant(A);
```

$$A := \begin{bmatrix} 58 & 97 & -56 & 86 & -27 & -80 & 15 & -89 & -81 & 11 & \dots \\ 44 & -68 & 55 & 95 & -46 & -19 & -58 & 95 & 11 & 61 & \dots \\ 29 & 66 & -60 & 32 & -60 & -62 & 75 & 77 & -76 & 28 & \dots \\ 10 & 55 & -60 & -41 & -86 & 81 & -31 & -84 & 82 & -48 & \dots \\ -1 & 70 & -76 & 77 & 64 & 22 & -30 & -63 & -29 & -63 & \dots \\ 79 & 91 & -12 & 61 & -40 & 50 & -50 & 96 & 29 & 27 & \dots \\ -6 & 85 & 69 & -57 & -43 & 78 & 98 & 69 & 35 & 58 & \dots \\ -49 & 96 & -78 & -31 & 23 & -8 & 5 & 72 & -70 & 2 & \dots \\ -33 & 71 & 81 & 47 & 68 & -90 & -23 & 42 & -43 & 54 & \dots \\ -61 & -20 & 11 & 31 & -2 & -81 & 19 & 55 & -23 & 47 & \dots \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \end{bmatrix}$$

20 × 20 Matrix

$$3\sqrt{147391}$$
$$-2101594741677666958361880780822267485363973 0 \quad (2)$$

```
> for n from 90 to 110 do
  R := RandomMatrix(n,n):
  print(n, evalf(log[10](Norm(R,'Frobenius'))), evalf(log[10](abs
  (Determinant(R))))):
  od:
```

```
90, 3.714830356, 226.6177497
91, 3.716926239, 228.7891174
92, 3.724420002, 232.5539088
93, 3.727842945, 234.8634529
94, 3.730340681, 236.1814157
95, 3.737848201, 240.0580898
96, 3.736789676, 243.0996090
97, 3.750208982, 246.4679588
98, 3.748729181, 248.1301161
99, 3.752114203, 251.0583312
100, 3.756333822, 252.3696273
101, 3.762856088, 256.0371929
102, 3.769838446, 260.1545983
103, 3.775431115, 262.9192489
104, 3.778707316, 265.0980902
105, 3.778804298, 266.7740734
106, 3.783057697, 269.9077344
107, 3.789034686, 273.4837488
108, 3.792064678, 276.1281639
109, 3.795415224, 280.2970932
110, 3.801504047, 282.7779903
```
(3)

```
> x := 5; x; 'x'; eval('x');
```

$$x := 5$$
$$5$$
$$x$$
$$5 \quad (4)$$

```
>
```