

```

In[1]:= GaussJacobi[Ao_, bo_, Xo_, maxiter_] :=
Module[{A = N[Ao], b = N[bo], xk = Xo, xk1, i, j, k = 0,
n, m, OutputDetails},
Size = Dimensions[A];
n = Size[[1]];
m = Size[[2]];
If[n ≠ m, Print[
"not a square matrix, can not Proceed with Gauss Jacobi method"]; Return[]];
OutputDetails = {xk};
xk1 = Table[0, {n}];
While[k < maxiter,
For[i = 1, i ≤ n, i++,
xk1[[i]] =
1/A[[i, i]] (b[[i]] - Sum[(A[[i, j]] * xk[[j]]), {j, 1, i - 1}] - Sum[(A[[i, j]] * xk[[j]]), {j, i + 1, n}]); ];
k++;
OutputDetails = Append[OutputDetails, xk1];
xk = xk1];];
colHeading = Table[X[k], {k, 1, n}];
Print[
NumberForm[TableForm[OutputDetails, TableHeadings → {None, colHeading}], 6]];
Print["Number of iterations Performed", maxiter];];
A = {{5, 1, 2}, {-3, 9, 4}, {1, 2, -7}};
b = {10, -14, -33};
Xo = {0, 0, 0};
GaussJacobi[A, b, Xo, 15];

```

X[1]	X[2]	X[3]
0	0	0
2.	-1.55556	4.71429
0.425397	-2.98413	4.55556
0.774603	-3.43845	3.92245
1.11871	-3.04067	3.84253
1.07112	-2.89044	4.00534
0.975953	-2.97867	4.04146
0.979148	-3.02644	4.00266
1.00422	-3.00813	3.98947
1.00584	-2.99391	3.99828
0.99947	-2.99729	4.00257
0.998428	-3.00132	4.0007
0.999985	-3.00083	3.9994
1.00041	-2.99974	3.99976
1.00004	-2.99976	4.00013
0.999898	-3.00004	4.00008

Number of iterations Performed15