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> restart; with(LinearAlgebra) :
> j := 1
                                     j := 1
```

(1)

```
> NumOfVars := 40
                                     NumOfVars := 40
```

(2)

```
> for i from 1 to NumOfVars do
#Bi := RandomMatrix(3, 1, generator = 1..9) :
end do :
> for i from 1 to NumOfVars do
A := RandomMatrix(3, 3, generator = 1..9) :
if Determinant(A) ≠ 0 then Pj := A; j := j + 1; else
end if ;
end do :
```

> Задачи :

> Матрица :

> seq([i, M=P_i], i=1..j-1)

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1, M=  $\begin{bmatrix} 5 & 9 & 1 \\ 9 & 2 & 7 \\ 4 & 4 & 1 \end{bmatrix}$ , 2, M=  $\begin{bmatrix} 9 & 4 & 4 \\ 5 & 7 & 8 \\ 2 & 7 & 8 \end{bmatrix}$ , 3, M=  $\begin{bmatrix} 8 & 9 & 9 \\ 6 & 7 & 6 \\ 5 & 3 & 9 \end{bmatrix}$ , 4, M=  $\begin{bmatrix} 9 & 5 & 6 \\ 8 & 7 & 6 \\ 6 & 4 & 2 \end{bmatrix}$ , 5, M
=  $\begin{bmatrix} 4 & 2 & 6 \\ 4 & 2 & 4 \\ 3 & 8 & 3 \end{bmatrix}$ , 6, M=  $\begin{bmatrix} 4 & 9 & 9 \\ 7 & 6 & 2 \\ 4 & 9 & 7 \end{bmatrix}$ , 7, M=  $\begin{bmatrix} 2 & 3 & 9 \\ 5 & 5 & 4 \\ 3 & 9 & 7 \end{bmatrix}$ , 8, M=  $\begin{bmatrix} 6 & 1 & 8 \\ 4 & 4 & 7 \\ 5 & 8 & 5 \end{bmatrix}$ , 9, M
=  $\begin{bmatrix} 3 & 9 & 7 \\ 6 & 1 & 2 \\ 8 & 7 & 2 \end{bmatrix}$ , 10, M=  $\begin{bmatrix} 7 & 6 & 8 \\ 1 & 4 & 8 \\ 6 & 7 & 7 \end{bmatrix}$ , 11, M=  $\begin{bmatrix} 9 & 9 & 2 \\ 7 & 8 & 3 \\ 3 & 1 & 3 \end{bmatrix}$ , 12, M=  $\begin{bmatrix} 5 & 5 & 9 \\ 3 & 4 & 9 \\ 8 & 9 & 8 \end{bmatrix}$ , 13, M
=  $\begin{bmatrix} 8 & 8 & 5 \\ 8 & 1 & 8 \\ 2 & 6 & 6 \end{bmatrix}$ , 14, M=  $\begin{bmatrix} 8 & 6 & 4 \\ 8 & 6 & 8 \\ 2 & 8 & 4 \end{bmatrix}$ , 15, M=  $\begin{bmatrix} 8 & 4 & 4 \\ 4 & 7 & 7 \\ 3 & 5 & 9 \end{bmatrix}$ , 16, M=  $\begin{bmatrix} 1 & 2 & 3 \\ 5 & 2 & 9 \\ 7 & 2 & 4 \end{bmatrix}$ , 17, M
=  $\begin{bmatrix} 1 & 1 & 2 \\ 6 & 9 & 4 \\ 4 & 9 & 7 \end{bmatrix}$ , 18, M=  $\begin{bmatrix} 4 & 7 & 2 \\ 9 & 5 & 1 \\ 1 & 4 & 8 \end{bmatrix}$ , 19, M=  $\begin{bmatrix} 6 & 1 & 6 \\ 2 & 7 & 4 \\ 7 & 1 & 5 \end{bmatrix}$ , 20, M=  $\begin{bmatrix} 8 & 7 & 5 \\ 9 & 7 & 7 \\ 5 & 7 & 7 \end{bmatrix}$ , 21, M
=  $\begin{bmatrix} 4 & 3 & 1 \\ 5 & 1 & 5 \\ 1 & 5 & 8 \end{bmatrix}$ , 22, M=  $\begin{bmatrix} 9 & 1 & 6 \\ 1 & 8 & 2 \\ 2 & 4 & 7 \end{bmatrix}$ , 23, M=  $\begin{bmatrix} 6 & 3 & 1 \\ 5 & 7 & 9 \\ 6 & 4 & 6 \end{bmatrix}$ , 24, M=  $\begin{bmatrix} 7 & 4 & 9 \\ 4 & 2 & 6 \\ 7 & 7 & 8 \end{bmatrix}$ , 25, M
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(3)

$$\begin{aligned}
&= \begin{bmatrix} 3 & 7 & 6 \\ 6 & 4 & 3 \\ 9 & 3 & 9 \end{bmatrix}, \quad 26, M = \begin{bmatrix} 7 & 8 & 5 \\ 9 & 6 & 5 \\ 9 & 6 & 6 \end{bmatrix}, \quad 27, M = \begin{bmatrix} 8 & 5 & 8 \\ 7 & 6 & 7 \\ 2 & 9 & 6 \end{bmatrix}, \quad 28, M = \begin{bmatrix} 9 & 1 & 7 \\ 1 & 6 & 2 \\ 7 & 3 & 2 \end{bmatrix}, \quad 29, M \\
&= \begin{bmatrix} 8 & 9 & 3 \\ 9 & 4 & 8 \\ 7 & 9 & 4 \end{bmatrix}, \quad 30, M = \begin{bmatrix} 3 & 9 & 1 \\ 2 & 7 & 9 \\ 5 & 1 & 8 \end{bmatrix}, \quad 31, M = \begin{bmatrix} 1 & 2 & 8 \\ 4 & 3 & 7 \\ 8 & 5 & 1 \end{bmatrix}, \quad 32, M = \begin{bmatrix} 2 & 7 & 5 \\ 9 & 1 & 5 \\ 6 & 2 & 9 \end{bmatrix}, \quad 33, M \\
&= \begin{bmatrix} 9 & 6 & 7 \\ 9 & 5 & 1 \\ 4 & 7 & 4 \end{bmatrix}, \quad 34, M = \begin{bmatrix} 1 & 7 & 4 \\ 8 & 4 & 2 \\ 8 & 1 & 3 \end{bmatrix}, \quad 35, M = \begin{bmatrix} 1 & 5 & 2 \\ 7 & 9 & 1 \\ 6 & 4 & 9 \end{bmatrix}, \quad 36, M = \begin{bmatrix} 7 & 6 & 3 \\ 1 & 1 & 2 \\ 4 & 7 & 8 \end{bmatrix}, \quad 37, M \\
&= \begin{bmatrix} 6 & 8 & 1 \\ 3 & 7 & 4 \\ 9 & 9 & 8 \end{bmatrix}, \quad 38, M = \begin{bmatrix} 4 & 3 & 6 \\ 2 & 4 & 6 \\ 5 & 1 & 6 \end{bmatrix}, \quad 39, M = \begin{bmatrix} 4 & 5 & 7 \\ 7 & 4 & 7 \\ 3 & 3 & 8 \end{bmatrix}
\end{aligned}$$

> **Определитель (ответ) :**

> $seq([i, det(M) = Determinant(P_i)], i = 1 .. j - 1)$

$$\begin{aligned}
&[1, det(M) = 69], [2, det(M) = -12], [3, det(M) = -9], [4, det(M) = -50], [5, det(M) = 52], \quad (4) \\
&[6, det(M) = 78], [7, det(M) = 199], [8, det(M) = -105], [9, det(M) = 238], [10, det(M) \\
&= -86], [11, det(M) = 47], [12, det(M) = -50], [13, det(M) = -362], [14, det(M) = \\
&-208], [15, det(M) = 160], [16, det(M) = 64], [17, det(M) = 37], [18, det(M) = -291], \\
&[19, det(M) = -78], [20, det(M) = -56], [21, det(M) = -149], [22, det(M) = 357], [23, \\
&det(M) = 86], [24, det(M) = -16], [25, det(M) = -216], [26, det(M) = -30], [27, det(M) \\
&= 52], [28, det(M) = -207], [29, det(M) = -109], [30, det(M) = 369], [31, det(M) \\
&= 40], [32, det(M) = -299], [33, det(M) = 226], [34, det(M) = -142], [35, det(M) = \\
&-260], [36, det(M) = -33], [37, det(M) = 180], [38, det(M) = 18], [39, det(M) = -68]
\end{aligned}$$

> **Обратная матрица (ответ) :**

> $seq([i, M^{-1} = MatrixInverse(P_i)], i = 1 .. j - 1)$

$$\begin{aligned}
&1, \frac{1}{M} = \begin{bmatrix} -\frac{26}{69} & -\frac{5}{69} & \frac{61}{69} \\ \frac{19}{69} & \frac{1}{69} & -\frac{26}{69} \\ \frac{28}{69} & \frac{16}{69} & -\frac{71}{69} \end{bmatrix}, \quad 2, \frac{1}{M} = \begin{bmatrix} 0 & \frac{1}{3} & -\frac{1}{3} \\ 2 & -\frac{16}{3} & \frac{13}{3} \\ -\frac{7}{4} & \frac{55}{12} & -\frac{43}{12} \end{bmatrix}, \quad 3, \frac{1}{M} \quad (5)
\end{aligned}$$

$$\begin{aligned}
&= \left[\begin{array}{ccc} -5 & 6 & 1 \\ \frac{8}{3} & -3 & -\frac{2}{3} \\ \frac{17}{9} & -\frac{7}{3} & -\frac{2}{9} \end{array} \right], 4, \frac{1}{M} = \left[\begin{array}{ccc} \frac{1}{5} & -\frac{7}{25} & \frac{6}{25} \\ -\frac{2}{5} & \frac{9}{25} & \frac{3}{25} \\ \frac{1}{5} & \frac{3}{25} & -\frac{23}{50} \end{array} \right], 5, \frac{1}{M} \\
&= \left[\begin{array}{ccc} -\frac{1}{2} & \frac{21}{26} & -\frac{1}{13} \\ 0 & -\frac{3}{26} & \frac{2}{13} \\ \frac{1}{2} & -\frac{1}{2} & 0 \end{array} \right], 6, \frac{1}{M} = \left[\begin{array}{ccc} \frac{4}{13} & \frac{3}{13} & -\frac{6}{13} \\ -\frac{41}{78} & -\frac{4}{39} & \frac{55}{78} \\ \frac{1}{2} & 0 & -\frac{1}{2} \end{array} \right], 7, \frac{1}{M} \\
&= \left[\begin{array}{ccc} -\frac{1}{199} & \frac{60}{199} & -\frac{33}{199} \\ -\frac{23}{199} & -\frac{13}{199} & \frac{37}{199} \\ \frac{30}{199} & -\frac{9}{199} & -\frac{5}{199} \end{array} \right], 8, \frac{1}{M} = \left[\begin{array}{ccc} \frac{12}{35} & -\frac{59}{105} & \frac{5}{21} \\ -\frac{1}{7} & \frac{2}{21} & \frac{2}{21} \\ -\frac{4}{35} & \frac{43}{105} & -\frac{4}{21} \end{array} \right], 9, \frac{1}{M} \\
&= \left[\begin{array}{ccc} -\frac{6}{119} & \frac{31}{238} & \frac{11}{238} \\ \frac{2}{119} & -\frac{25}{119} & \frac{18}{119} \\ \frac{1}{7} & \frac{3}{14} & -\frac{3}{14} \end{array} \right], 10, \frac{1}{M} = \left[\begin{array}{ccc} \frac{14}{43} & -\frac{7}{43} & -\frac{8}{43} \\ -\frac{41}{86} & -\frac{1}{86} & \frac{24}{43} \\ \frac{17}{86} & \frac{13}{86} & -\frac{11}{43} \end{array} \right], 11, \frac{1}{M} \\
&= \left[\begin{array}{ccc} \frac{21}{47} & -\frac{25}{47} & \frac{11}{47} \\ -\frac{12}{47} & \frac{21}{47} & -\frac{13}{47} \\ -\frac{17}{47} & \frac{18}{47} & \frac{9}{47} \end{array} \right], 12, \frac{1}{M} = \left[\begin{array}{ccc} \frac{49}{50} & -\frac{41}{50} & -\frac{9}{50} \\ -\frac{24}{25} & \frac{16}{25} & \frac{9}{25} \\ \frac{1}{10} & \frac{1}{10} & -\frac{1}{10} \end{array} \right], 13, \frac{1}{M} \\
&= \left[\begin{array}{ccc} \frac{21}{181} & \frac{9}{181} & -\frac{59}{362} \\ \frac{16}{181} & -\frac{19}{181} & \frac{12}{181} \\ -\frac{23}{181} & \frac{16}{181} & \frac{28}{181} \end{array} \right], 14, \frac{1}{M} = \left[\begin{array}{ccc} \frac{5}{26} & -\frac{1}{26} & -\frac{3}{26} \\ \frac{1}{13} & -\frac{3}{26} & \frac{2}{13} \\ -\frac{1}{4} & \frac{1}{4} & 0 \end{array} \right], 15, \frac{1}{M}
\end{aligned}$$

$$\begin{aligned}
&= \left[\begin{array}{ccc} \frac{7}{40} & -\frac{1}{10} & 0 \\ -\frac{3}{32} & \frac{3}{8} & -\frac{1}{4} \\ -\frac{1}{160} & -\frac{7}{40} & \frac{1}{4} \end{array} \right], 16, \frac{1}{M} = \left[\begin{array}{ccc} -\frac{5}{32} & -\frac{1}{32} & \frac{3}{16} \\ \frac{43}{64} & -\frac{17}{64} & \frac{3}{32} \\ -\frac{1}{16} & \frac{3}{16} & -\frac{1}{8} \end{array} \right], 17, \frac{1}{M} \\
&= \left[\begin{array}{ccc} \frac{27}{37} & \frac{11}{37} & -\frac{14}{37} \\ -\frac{26}{37} & -\frac{1}{37} & \frac{8}{37} \\ \frac{18}{37} & -\frac{5}{37} & \frac{3}{37} \end{array} \right], 18, \frac{1}{M} = \left[\begin{array}{ccc} -\frac{12}{97} & \frac{16}{97} & \frac{1}{97} \\ \frac{71}{291} & -\frac{10}{97} & -\frac{14}{291} \\ -\frac{31}{291} & \frac{3}{97} & \frac{43}{291} \end{array} \right], 19, \frac{1}{M} \\
&= \left[\begin{array}{ccc} -\frac{31}{78} & -\frac{1}{78} & \frac{19}{39} \\ -\frac{3}{13} & \frac{2}{13} & \frac{2}{13} \\ \frac{47}{78} & -\frac{1}{78} & -\frac{20}{39} \end{array} \right], 20, \frac{1}{M} = \left[\begin{array}{ccc} 0 & \frac{1}{4} & -\frac{1}{4} \\ \frac{1}{2} & -\frac{31}{56} & \frac{11}{56} \\ -\frac{1}{2} & \frac{3}{8} & \frac{1}{8} \end{array} \right], 21, \frac{1}{M} \\
&= \left[\begin{array}{ccc} \frac{17}{149} & \frac{19}{149} & -\frac{14}{149} \\ \frac{35}{149} & -\frac{31}{149} & \frac{15}{149} \\ -\frac{24}{149} & \frac{17}{149} & \frac{11}{149} \end{array} \right], 22, \frac{1}{M} = \left[\begin{array}{ccc} \frac{16}{119} & \frac{1}{21} & -\frac{46}{357} \\ -\frac{1}{119} & \frac{1}{7} & -\frac{4}{119} \\ -\frac{4}{119} & -\frac{2}{21} & \frac{71}{357} \end{array} \right], 23, \frac{1}{M} \\
&= \left[\begin{array}{ccc} \frac{3}{43} & -\frac{7}{43} & \frac{10}{43} \\ \frac{12}{43} & \frac{15}{43} & -\frac{49}{86} \\ -\frac{11}{43} & -\frac{3}{43} & \frac{27}{86} \end{array} \right], 24, \frac{1}{M} = \left[\begin{array}{ccc} \frac{13}{8} & -\frac{31}{16} & -\frac{3}{8} \\ -\frac{5}{8} & \frac{7}{16} & \frac{3}{8} \\ -\frac{7}{8} & \frac{21}{16} & \frac{1}{8} \end{array} \right], 25, \frac{1}{M} \\
&= \left[\begin{array}{ccc} -\frac{1}{8} & \frac{5}{24} & \frac{1}{72} \\ \frac{1}{8} & \frac{1}{8} & -\frac{1}{8} \\ \frac{1}{12} & -\frac{1}{4} & \frac{5}{36} \end{array} \right], 26, \frac{1}{M} = \left[\begin{array}{ccc} -\frac{1}{5} & \frac{3}{5} & -\frac{1}{3} \\ \frac{3}{10} & \frac{1}{10} & -\frac{1}{3} \\ 0 & -1 & 1 \end{array} \right], 27, \frac{1}{M}
\end{aligned}$$

$$\begin{aligned}
&= \begin{bmatrix} -\frac{27}{52} & \frac{21}{26} & -\frac{1}{4} \\ -\frac{7}{13} & \frac{8}{13} & 0 \\ \frac{51}{52} & -\frac{31}{26} & \frac{1}{4} \end{bmatrix}, \quad 28, \quad \frac{1}{M} = \begin{bmatrix} -\frac{2}{69} & -\frac{19}{207} & \frac{40}{207} \\ -\frac{4}{69} & \frac{31}{207} & \frac{11}{207} \\ \frac{13}{69} & \frac{20}{207} & -\frac{53}{207} \end{bmatrix}, \quad 29, \quad \frac{1}{M} \\
&= \begin{bmatrix} \frac{56}{109} & \frac{9}{109} & -\frac{60}{109} \\ -\frac{20}{109} & -\frac{11}{109} & \frac{37}{109} \\ -\frac{53}{109} & \frac{9}{109} & \frac{49}{109} \end{bmatrix}, \quad 30, \quad \frac{1}{M} = \begin{bmatrix} \frac{47}{369} & -\frac{71}{369} & \frac{74}{369} \\ \frac{29}{369} & \frac{19}{369} & -\frac{25}{369} \\ -\frac{11}{123} & \frac{14}{123} & \frac{1}{123} \end{bmatrix}, \quad 31, \quad \frac{1}{M} \\
&= \begin{bmatrix} -\frac{4}{5} & \frac{19}{20} & -\frac{1}{4} \\ \frac{13}{10} & -\frac{63}{40} & \frac{5}{8} \\ -\frac{1}{10} & \frac{11}{40} & -\frac{1}{8} \end{bmatrix}, \quad 32, \quad \frac{1}{M} = \begin{bmatrix} \frac{1}{299} & \frac{53}{299} & -\frac{30}{299} \\ \frac{51}{299} & \frac{12}{299} & -\frac{35}{299} \\ -\frac{12}{299} & -\frac{38}{299} & \frac{61}{299} \end{bmatrix}, \quad 33, \quad \frac{1}{M} \\
&= \begin{bmatrix} \frac{13}{226} & \frac{25}{226} & -\frac{29}{226} \\ -\frac{16}{113} & \frac{4}{113} & \frac{27}{113} \\ \frac{43}{226} & -\frac{39}{226} & -\frac{9}{226} \end{bmatrix}, \quad 34, \quad \frac{1}{M} = \begin{bmatrix} -\frac{5}{71} & \frac{17}{142} & \frac{1}{71} \\ \frac{4}{71} & \frac{29}{142} & -\frac{15}{71} \\ \frac{12}{71} & -\frac{55}{142} & \frac{26}{71} \end{bmatrix}, \quad 35, \quad \frac{1}{M} \\
&= \begin{bmatrix} -\frac{77}{260} & \frac{37}{260} & \frac{1}{20} \\ \frac{57}{260} & \frac{3}{260} & -\frac{1}{20} \\ \frac{1}{10} & -\frac{1}{10} & \frac{1}{10} \end{bmatrix}, \quad 36, \quad \frac{1}{M} = \begin{bmatrix} \frac{2}{11} & \frac{9}{11} & -\frac{3}{11} \\ 0 & -\frac{4}{3} & \frac{1}{3} \\ -\frac{1}{11} & \frac{25}{33} & -\frac{1}{33} \end{bmatrix}, \quad 37, \quad \frac{1}{M} \\
&= \begin{bmatrix} \frac{1}{9} & -\frac{11}{36} & \frac{5}{36} \\ \frac{1}{15} & \frac{13}{60} & -\frac{7}{60} \\ -\frac{1}{5} & \frac{1}{10} & \frac{1}{10} \end{bmatrix}, \quad 38, \quad \frac{1}{M} = \begin{bmatrix} 1 & -\frac{2}{3} & -\frac{1}{3} \\ 1 & -\frac{1}{3} & -\frac{2}{3} \\ -1 & \frac{11}{18} & \frac{5}{9} \end{bmatrix}, \quad 39, \quad \frac{1}{M}
\end{aligned}$$

$$= \begin{bmatrix} -\frac{11}{68} & \frac{19}{68} & -\frac{7}{68} \\ \frac{35}{68} & -\frac{11}{68} & -\frac{21}{68} \\ -\frac{9}{68} & -\frac{3}{68} & \frac{19}{68} \end{bmatrix}$$

> Приведение матрицы к треугольному виду (ответ) :

> seq([i, M⁻¹ = GaussianElimination(P_i)], i=1 .. j-1)

$$\begin{aligned} & \left[1, \frac{1}{M} = \begin{bmatrix} 5 & 9 & 1 \\ 0 & -\frac{71}{5} & \frac{26}{5} \\ 0 & 0 & -\frac{69}{71} \end{bmatrix} \right], \left[2, \frac{1}{M} = \begin{bmatrix} 9 & 4 & 4 \\ 0 & \frac{43}{9} & \frac{52}{9} \\ 0 & 0 & -\frac{12}{43} \end{bmatrix} \right], \left[3, \frac{1}{M} = \begin{bmatrix} 8 & 9 & 9 \\ 0 & \frac{1}{4} & -\frac{3}{4} \\ 0 & 0 & -\frac{9}{2} \end{bmatrix} \right], \left[4, \right. \\ & \left. \frac{1}{M} = \begin{bmatrix} 9 & 5 & 6 \\ 0 & \frac{23}{9} & \frac{2}{3} \\ 0 & 0 & -\frac{50}{23} \end{bmatrix} \right], \left[5, \frac{1}{M} = \begin{bmatrix} 4 & 2 & 6 \\ 0 & \frac{13}{2} & -\frac{3}{2} \\ 0 & 0 & -2 \end{bmatrix} \right], \left[6, \frac{1}{M} = \begin{bmatrix} 4 & 9 & 9 \\ 0 & -\frac{39}{4} & -\frac{55}{4} \\ 0 & 0 & -2 \end{bmatrix} \right], \left[7, \right. \\ & \left. \frac{1}{M} = \begin{bmatrix} 2 & 3 & 9 \\ 0 & -\frac{5}{2} & -\frac{37}{2} \\ 0 & 0 & -\frac{199}{5} \end{bmatrix} \right], \left[8, \frac{1}{M} = \begin{bmatrix} 6 & 1 & 8 \\ 0 & \frac{10}{3} & \frac{5}{3} \\ 0 & 0 & -\frac{21}{4} \end{bmatrix} \right], \left[9, \frac{1}{M} = \begin{bmatrix} 3 & 9 & 7 \\ 0 & -17 & -12 \\ 0 & 0 & -\frac{14}{3} \end{bmatrix} \right], \\ & \left[10, \frac{1}{M} = \begin{bmatrix} 7 & 6 & 8 \\ 0 & \frac{22}{7} & \frac{48}{7} \\ 0 & 0 & -\frac{43}{11} \end{bmatrix} \right], \left[11, \frac{1}{M} = \begin{bmatrix} 9 & 9 & 2 \\ 0 & 1 & \frac{13}{9} \\ 0 & 0 & \frac{47}{9} \end{bmatrix} \right], \left[12, \frac{1}{M} = \begin{bmatrix} 5 & 5 & 9 \\ 0 & 1 & \frac{18}{5} \\ 0 & 0 & -10 \end{bmatrix} \right], \left[13, \right. \\ & \left. \frac{1}{M} = \begin{bmatrix} 8 & 8 & 5 \\ 0 & -7 & 3 \\ 0 & 0 & \frac{181}{28} \end{bmatrix} \right], \left[14, \frac{1}{M} = \begin{bmatrix} 8 & 6 & 4 \\ 0 & \frac{13}{2} & 3 \\ 0 & 0 & 4 \end{bmatrix} \right], \left[15, \frac{1}{M} = \begin{bmatrix} 8 & 4 & 4 \\ 0 & 5 & 5 \\ 0 & 0 & 4 \end{bmatrix} \right], \left[16, \frac{1}{M} \right. \end{aligned} \quad (6)$$

$$\begin{aligned}
&= \begin{bmatrix} 1 & 2 & 3 \\ 0 & -8 & -6 \\ 0 & 0 & -8 \end{bmatrix}, \begin{bmatrix} 17, \frac{1}{M} = \begin{bmatrix} 1 & 1 & 2 \\ 0 & 3 & -8 \\ 0 & 0 & \frac{37}{3} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 18, \frac{1}{M} = \begin{bmatrix} 4 & 7 & 2 \\ 0 & -\frac{43}{4} & -\frac{7}{2} \\ 0 & 0 & \frac{291}{43} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 19, \frac{1}{M} \\ \\ \\ \end{bmatrix} \\
&= \begin{bmatrix} 6 & 1 & 6 \\ 0 & \frac{20}{3} & 2 \\ 0 & 0 & -\frac{39}{20} \end{bmatrix}, \begin{bmatrix} 20, \frac{1}{M} = \begin{bmatrix} 8 & 7 & 5 \\ 0 & -\frac{7}{8} & \frac{11}{8} \\ 0 & 0 & 8 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 21, \frac{1}{M} = \begin{bmatrix} 4 & 3 & 1 \\ 0 & -\frac{11}{4} & \frac{15}{4} \\ 0 & 0 & \frac{149}{11} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 22, \\ \\ \\ \end{bmatrix} \\
&\frac{1}{M} = \begin{bmatrix} 9 & 1 & 6 \\ 0 & \frac{71}{9} & \frac{4}{3} \\ 0 & 0 & \frac{357}{71} \end{bmatrix}, \begin{bmatrix} 23, \frac{1}{M} = \begin{bmatrix} 6 & 3 & 1 \\ 0 & \frac{9}{2} & \frac{49}{6} \\ 0 & 0 & \frac{86}{27} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 24, \frac{1}{M} = \begin{bmatrix} 7 & 4 & 9 \\ 0 & -\frac{2}{7} & \frac{6}{7} \\ 0 & 0 & 8 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 25, \\ \\ \\ \end{bmatrix} \\
&\frac{1}{M} = \begin{bmatrix} 3 & 7 & 6 \\ 0 & -10 & -9 \\ 0 & 0 & \frac{36}{5} \end{bmatrix}, \begin{bmatrix} 26, \frac{1}{M} = \begin{bmatrix} 7 & 8 & 5 \\ 0 & -\frac{30}{7} & -\frac{10}{7} \\ 0 & 0 & 1 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 27, \frac{1}{M} = \begin{bmatrix} 8 & 5 & 8 \\ 0 & \frac{13}{8} & 0 \\ 0 & 0 & 4 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 28, \\ \\ \\ \end{bmatrix} \\
&\frac{1}{M} = \begin{bmatrix} 9 & 1 & 7 \\ 0 & \frac{53}{9} & \frac{11}{9} \\ 0 & 0 & -\frac{207}{53} \end{bmatrix}, \begin{bmatrix} 29, \frac{1}{M} = \begin{bmatrix} 8 & 9 & 3 \\ 0 & -\frac{49}{8} & \frac{37}{8} \\ 0 & 0 & \frac{109}{49} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 30, \frac{1}{M} = \begin{bmatrix} 3 & 9 & 1 \\ 0 & 1 & \frac{25}{3} \\ 0 & 0 & 123 \end{bmatrix} \end{bmatrix}, \\
&\begin{bmatrix} 31, \frac{1}{M} = \begin{bmatrix} 1 & 2 & 8 \\ 0 & -5 & -25 \\ 0 & 0 & -8 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 32, \frac{1}{M} = \begin{bmatrix} 2 & 7 & 5 \\ 0 & -\frac{61}{2} & -\frac{35}{2} \\ 0 & 0 & \frac{299}{61} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 33, \frac{1}{M} \\ \\ \\ \end{bmatrix} \\
&= \begin{bmatrix} 9 & 6 & 7 \\ 0 & -1 & -6 \\ 0 & 0 & -\frac{226}{9} \end{bmatrix}, \begin{bmatrix} 34, \frac{1}{M} = \begin{bmatrix} 1 & 7 & 4 \\ 0 & -52 & -30 \\ 0 & 0 & \frac{71}{26} \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 35, \frac{1}{M} = \begin{bmatrix} 1 & 5 & 2 \\ 0 & -26 & -13 \\ 0 & 0 & 10 \end{bmatrix} \end{bmatrix}, \begin{bmatrix} 36, \frac{1}{M} \\ \\ \\ \end{bmatrix}
\end{aligned}$$

$$= \begin{bmatrix} 7 & 6 & 3 \\ 0 & \frac{1}{7} & \frac{11}{7} \\ 0 & 0 & -33 \end{bmatrix}, \begin{bmatrix} 37, \frac{1}{M} = \begin{bmatrix} 6 & 8 & 1 \\ 0 & 3 & \frac{7}{2} \\ 0 & 0 & 10 \end{bmatrix}, \begin{bmatrix} 38, \frac{1}{M} = \begin{bmatrix} 4 & 3 & 6 \\ 0 & \frac{5}{2} & 3 \\ 0 & 0 & \frac{9}{5} \end{bmatrix}, \begin{bmatrix} 39, \frac{1}{M} = \begin{bmatrix} 4 & 5 & 7 \\ 0 & -\frac{19}{4} & -\frac{21}{4} \\ 0 & 0 & \frac{68}{19} \end{bmatrix}$$

> for i from 1 to $NumOfVars$ do
 $B_i := RandomMatrix(3, 1, generator = 1..9)$:
end do :

> Решение системы уравнений методом исключения Гаусса :

> *Основная матрица :*

> $seq([i, M=P_i], i=1..j-1)$

$$\begin{aligned} & \left[1, M = \begin{bmatrix} 5 & 9 & 1 \\ 9 & 2 & 7 \\ 4 & 4 & 1 \end{bmatrix} \right], \left[2, M = \begin{bmatrix} 9 & 4 & 4 \\ 5 & 7 & 8 \\ 2 & 7 & 8 \end{bmatrix} \right], \left[3, M = \begin{bmatrix} 8 & 9 & 9 \\ 6 & 7 & 6 \\ 5 & 3 & 9 \end{bmatrix} \right], \left[4, M = \begin{bmatrix} 9 & 5 & 6 \\ 8 & 7 & 6 \\ 6 & 4 & 2 \end{bmatrix} \right], \left[5, M = \begin{bmatrix} 4 & 2 & 6 \\ 4 & 2 & 4 \\ 3 & 8 & 3 \end{bmatrix} \right], \\ & \left[6, M = \begin{bmatrix} 4 & 9 & 9 \\ 7 & 6 & 2 \\ 4 & 9 & 7 \end{bmatrix} \right], \left[7, M = \begin{bmatrix} 2 & 3 & 9 \\ 5 & 5 & 4 \\ 3 & 9 & 7 \end{bmatrix} \right], \left[8, M = \begin{bmatrix} 6 & 1 & 8 \\ 4 & 4 & 7 \\ 5 & 8 & 5 \end{bmatrix} \right], \left[9, M = \begin{bmatrix} 3 & 9 & 7 \\ 6 & 1 & 2 \\ 8 & 7 & 2 \end{bmatrix} \right], \\ & \left[10, M = \begin{bmatrix} 7 & 6 & 8 \\ 1 & 4 & 8 \\ 6 & 7 & 7 \end{bmatrix} \right], \left[11, M = \begin{bmatrix} 9 & 9 & 2 \\ 7 & 8 & 3 \\ 3 & 1 & 3 \end{bmatrix} \right], \left[12, M = \begin{bmatrix} 5 & 5 & 9 \\ 3 & 4 & 9 \\ 8 & 9 & 8 \end{bmatrix} \right], \left[13, M = \begin{bmatrix} 8 & 8 & 5 \\ 8 & 1 & 8 \\ 2 & 6 & 6 \end{bmatrix} \right], \\ & \left[14, M = \begin{bmatrix} 8 & 6 & 4 \\ 8 & 6 & 8 \\ 2 & 8 & 4 \end{bmatrix} \right], \left[15, M = \begin{bmatrix} 8 & 4 & 4 \\ 4 & 7 & 7 \\ 3 & 5 & 9 \end{bmatrix} \right], \left[16, M = \begin{bmatrix} 1 & 2 & 3 \\ 5 & 2 & 9 \\ 7 & 2 & 4 \end{bmatrix} \right], \left[17, M = \begin{bmatrix} 1 & 1 & 2 \\ 6 & 9 & 4 \\ 4 & 9 & 7 \end{bmatrix} \right], \\ & \left[18, M = \begin{bmatrix} 4 & 7 & 2 \\ 9 & 5 & 1 \\ 1 & 4 & 8 \end{bmatrix} \right], \left[19, M = \begin{bmatrix} 6 & 1 & 6 \\ 2 & 7 & 4 \\ 7 & 1 & 5 \end{bmatrix} \right], \left[20, M = \begin{bmatrix} 8 & 7 & 5 \\ 9 & 7 & 7 \\ 5 & 7 & 7 \end{bmatrix} \right], \left[21, M = \begin{bmatrix} 4 & 3 & 1 \\ 5 & 1 & 5 \\ 1 & 5 & 8 \end{bmatrix} \right], \\ & \left[22, M = \begin{bmatrix} 9 & 1 & 6 \\ 1 & 8 & 2 \\ 2 & 4 & 7 \end{bmatrix} \right], \left[23, M = \begin{bmatrix} 6 & 3 & 1 \\ 5 & 7 & 9 \\ 6 & 4 & 6 \end{bmatrix} \right], \left[24, M = \begin{bmatrix} 7 & 4 & 9 \\ 4 & 2 & 6 \\ 7 & 7 & 8 \end{bmatrix} \right], \left[25, M = \right] \end{aligned} \quad (7)$$

$$\begin{aligned}
&= \begin{bmatrix} 3 & 7 & 6 \\ 6 & 4 & 3 \\ 9 & 3 & 9 \end{bmatrix}, 26, M = \begin{bmatrix} 7 & 8 & 5 \\ 9 & 6 & 5 \\ 9 & 6 & 6 \end{bmatrix}, 27, M = \begin{bmatrix} 8 & 5 & 8 \\ 7 & 6 & 7 \\ 2 & 9 & 6 \end{bmatrix}, 28, M = \begin{bmatrix} 9 & 1 & 7 \\ 1 & 6 & 2 \\ 7 & 3 & 2 \end{bmatrix}, 29, M \\
&= \begin{bmatrix} 8 & 9 & 3 \\ 9 & 4 & 8 \\ 7 & 9 & 4 \end{bmatrix}, 30, M = \begin{bmatrix} 3 & 9 & 1 \\ 2 & 7 & 9 \\ 5 & 1 & 8 \end{bmatrix}, 31, M = \begin{bmatrix} 1 & 2 & 8 \\ 4 & 3 & 7 \\ 8 & 5 & 1 \end{bmatrix}, 32, M = \begin{bmatrix} 2 & 7 & 5 \\ 9 & 1 & 5 \\ 6 & 2 & 9 \end{bmatrix}, 33, M \\
&= \begin{bmatrix} 9 & 6 & 7 \\ 9 & 5 & 1 \\ 4 & 7 & 4 \end{bmatrix}, 34, M = \begin{bmatrix} 1 & 7 & 4 \\ 8 & 4 & 2 \\ 8 & 1 & 3 \end{bmatrix}, 35, M = \begin{bmatrix} 1 & 5 & 2 \\ 7 & 9 & 1 \\ 6 & 4 & 9 \end{bmatrix}, 36, M = \begin{bmatrix} 7 & 6 & 3 \\ 1 & 1 & 2 \\ 4 & 7 & 8 \end{bmatrix}, 37, M \\
&= \begin{bmatrix} 6 & 8 & 1 \\ 3 & 7 & 4 \\ 9 & 9 & 8 \end{bmatrix}, 38, M = \begin{bmatrix} 4 & 3 & 6 \\ 2 & 4 & 6 \\ 5 & 1 & 6 \end{bmatrix}, 39, M = \begin{bmatrix} 4 & 5 & 7 \\ 7 & 4 & 7 \\ 3 & 3 & 8 \end{bmatrix}
\end{aligned}$$

> Правая часть уравнения : $Mx = F$:

> $seq([i, F=B_i], i=1..j-1)$

$$\begin{aligned}
&\begin{bmatrix} 1, F = \begin{bmatrix} 7 \\ 1 \\ 2 \end{bmatrix}, 2, F = \begin{bmatrix} 8 \\ 2 \\ 4 \end{bmatrix}, 3, F = \begin{bmatrix} 6 \\ 9 \\ 1 \end{bmatrix}, 4, F = \begin{bmatrix} 8 \\ 8 \\ 9 \end{bmatrix}, 5, F = \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix}, 6, F = \begin{bmatrix} 2 \\ 8 \\ 3 \end{bmatrix}, 7, F \\
&= \begin{bmatrix} 1 \\ 7 \\ 8 \end{bmatrix}, 8, F = \begin{bmatrix} 8 \\ 2 \\ 6 \end{bmatrix}, 9, F = \begin{bmatrix} 9 \\ 2 \\ 9 \end{bmatrix}, 10, F = \begin{bmatrix} 3 \\ 3 \\ 1 \end{bmatrix}, 11, F = \begin{bmatrix} 1 \\ 8 \\ 8 \end{bmatrix}, 12, F = \begin{bmatrix} 6 \\ 8 \\ 6 \end{bmatrix}, \\
&\begin{bmatrix} 13, F = \begin{bmatrix} 2 \\ 3 \\ 8 \end{bmatrix}, 14, F = \begin{bmatrix} 4 \\ 8 \\ 9 \end{bmatrix}, 15, F = \begin{bmatrix} 3 \\ 5 \\ 9 \end{bmatrix}, 16, F = \begin{bmatrix} 2 \\ 9 \\ 9 \end{bmatrix}, 17, F = \begin{bmatrix} 6 \\ 8 \\ 4 \end{bmatrix}, 18, F \\
&= \begin{bmatrix} 9 \\ 2 \\ 8 \end{bmatrix}, 19, F = \begin{bmatrix} 7 \\ 9 \\ 4 \end{bmatrix}, 20, F = \begin{bmatrix} 7 \\ 6 \\ 1 \end{bmatrix}, 21, F = \begin{bmatrix} 5 \\ 5 \\ 2 \end{bmatrix}, 22, F = \begin{bmatrix} 1 \\ 5 \\ 5 \end{bmatrix}, 23, F = \begin{bmatrix} 3 \\ 5 \\ 3 \end{bmatrix}, \\
&\begin{bmatrix} 24, F = \begin{bmatrix} 8 \\ 5 \\ 5 \end{bmatrix}, 25, F = \begin{bmatrix} 5 \\ 5 \\ 5 \end{bmatrix}, 26, F = \begin{bmatrix} 3 \\ 5 \\ 6 \end{bmatrix}, 27, F = \begin{bmatrix} 4 \\ 4 \\ 2 \end{bmatrix}, 28, F = \begin{bmatrix} 6 \\ 4 \\ 9 \end{bmatrix}, 29, F \\
&= \begin{bmatrix} 4 \\ 4 \\ 3 \end{bmatrix}, 30, F = \begin{bmatrix} 8 \\ 1 \\ 3 \end{bmatrix}, 31, F = \begin{bmatrix} 8 \\ 3 \\ 4 \end{bmatrix}, 32, F = \begin{bmatrix} 9 \\ 4 \\ 3 \end{bmatrix}, 33, F = \begin{bmatrix} 8 \\ 4 \\ 6 \end{bmatrix}, 34, F = \begin{bmatrix} 3 \\ 6 \\ 7 \end{bmatrix},
\end{aligned} \tag{8}$$

$$\left[\begin{array}{c} 35, F = \begin{bmatrix} 2 \\ 4 \\ 1 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 36, F = \begin{bmatrix} 5 \\ 1 \\ 2 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 37, F = \begin{bmatrix} 3 \\ 7 \\ 7 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 38, F = \begin{bmatrix} 8 \\ 4 \\ 8 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 39, F = \begin{bmatrix} 5 \\ 6 \\ 1 \end{bmatrix} \end{array} \right]$$

> OTBET:

> $seq([i, x = ReducedRowEchelonForm(\langle P_i | B_i \rangle)], i = 1 .. j - 1)$

$$\begin{aligned} & \left[\begin{array}{c} 1, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{65}{69} \\ 0 & 1 & 0 & \frac{82}{69} \\ 0 & 0 & 1 & \frac{70}{69} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 2, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{2}{3} \\ 0 & 1 & 0 & \frac{68}{3} \\ 0 & 0 & 1 & -\frac{115}{6} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 3, x = \begin{bmatrix} 1 & 0 & 0 & 25 \\ 0 & 1 & 0 & -\frac{35}{3} \\ 0 & 0 & 1 & -\frac{89}{9} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 4, x \\ \\ \\ \end{array} \right] \\ & = \left[\begin{array}{c} \begin{bmatrix} 1 & 0 & 0 & \frac{38}{25} \\ 0 & 1 & 0 & \frac{19}{25} \\ 0 & 0 & 1 & -\frac{79}{50} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 5, x = \begin{bmatrix} 1 & 0 & 0 & \frac{7}{13} \\ 0 & 1 & 0 & -\frac{1}{13} \\ 0 & 0 & 1 & 1 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 6, x = \begin{bmatrix} 1 & 0 & 0 & \frac{14}{13} \\ 0 & 1 & 0 & \frac{19}{78} \\ 0 & 0 & 1 & -\frac{1}{2} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 7, x \\ \\ \\ \end{array} \right] \\ & = \left[\begin{array}{c} \begin{bmatrix} 1 & 0 & 0 & \frac{155}{199} \\ 0 & 1 & 0 & \frac{182}{199} \\ 0 & 0 & 1 & -\frac{73}{199} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 8, x = \begin{bmatrix} 1 & 0 & 0 & \frac{64}{21} \\ 0 & 1 & 0 & -\frac{8}{21} \\ 0 & 0 & 1 & -\frac{26}{21} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 9, x = \begin{bmatrix} 1 & 0 & 0 & \frac{53}{238} \\ 0 & 1 & 0 & \frac{130}{119} \\ 0 & 0 & 1 & -\frac{3}{14} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 10, x \\ \\ \\ \end{array} \right] \\ & = \left[\begin{array}{c} \begin{bmatrix} 1 & 0 & 0 & \frac{13}{43} \\ 0 & 1 & 0 & -\frac{39}{43} \\ 0 & 0 & 1 & \frac{34}{43} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 11, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{91}{47} \\ 0 & 1 & 0 & \frac{52}{47} \\ 0 & 0 & 1 & \frac{199}{47} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 12, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{44}{25} \\ 0 & 1 & 0 & \frac{38}{25} \\ 0 & 0 & 1 & \frac{4}{5} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 13, x \\ \\ \\ \end{array} \right] \\ & = \left[\begin{array}{c} \begin{bmatrix} 1 & 0 & 0 & -\frac{167}{181} \\ 0 & 1 & 0 & \frac{71}{181} \\ 0 & 0 & 1 & \frac{226}{181} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 14, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{15}{26} \\ 0 & 1 & 0 & \frac{10}{13} \\ 0 & 0 & 1 & 1 \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 15, x = \begin{bmatrix} 1 & 0 & 0 & \frac{1}{40} \\ 0 & 1 & 0 & -\frac{21}{32} \\ 0 & 0 & 1 & \frac{217}{160} \end{bmatrix} \end{array} \right], \left[\begin{array}{c} 16, x \\ \\ \\ \end{array} \right] \end{aligned} \tag{9}$$

$$= \begin{bmatrix} 1 & 0 & 0 & \frac{35}{32} \\ 0 & 1 & 0 & -\frac{13}{64} \\ 0 & 0 & 1 & \frac{7}{16} \end{bmatrix}, \quad 17, x = \begin{bmatrix} 1 & 0 & 0 & \frac{194}{37} \\ 0 & 1 & 0 & -\frac{132}{37} \\ 0 & 0 & 1 & \frac{80}{37} \end{bmatrix}, \quad 18, x = \begin{bmatrix} 1 & 0 & 0 & -\frac{68}{97} \\ 0 & 1 & 0 & \frac{467}{291} \\ 0 & 0 & 1 & \frac{83}{291} \end{bmatrix}, \quad 19, x$$

$$= \begin{bmatrix} 1 & 0 & 0 & -\frac{37}{39} \\ 0 & 1 & 0 & \frac{5}{13} \\ 0 & 0 & 1 & \frac{80}{39} \end{bmatrix}, \quad 20, x = \begin{bmatrix} 1 & 0 & 0 & \frac{5}{4} \\ 0 & 1 & 0 & \frac{3}{8} \\ 0 & 0 & 1 & -\frac{9}{8} \end{bmatrix}, \quad 21, x = \begin{bmatrix} 1 & 0 & 0 & \frac{152}{149} \\ 0 & 1 & 0 & \frac{50}{149} \\ 0 & 0 & 1 & -\frac{13}{149} \end{bmatrix}, \quad 22, x$$

$$= \begin{bmatrix} 1 & 0 & 0 & -\frac{97}{357} \\ 0 & 1 & 0 & \frac{64}{119} \\ 0 & 0 & 1 & \frac{173}{357} \end{bmatrix}, \quad 23, x = \begin{bmatrix} 1 & 0 & 0 & \frac{4}{43} \\ 0 & 1 & 0 & \frac{75}{86} \\ 0 & 0 & 1 & -\frac{15}{86} \end{bmatrix}, \quad 24, x = \begin{bmatrix} 1 & 0 & 0 & \frac{23}{16} \\ 0 & 1 & 0 & -\frac{15}{16} \\ 0 & 0 & 1 & \frac{3}{16} \end{bmatrix}, \quad 25, x$$

$$= \begin{bmatrix} 1 & 0 & 0 & \frac{35}{72} \\ 0 & 1 & 0 & \frac{5}{8} \\ 0 & 0 & 1 & -\frac{5}{36} \end{bmatrix}, \quad 26, x = \begin{bmatrix} 1 & 0 & 0 & \frac{2}{5} \\ 0 & 1 & 0 & -\frac{3}{5} \\ 0 & 0 & 1 & 1 \end{bmatrix}, \quad 27, x = \begin{bmatrix} 1 & 0 & 0 & \frac{17}{26} \\ 0 & 1 & 0 & \frac{4}{13} \\ 0 & 0 & 1 & -\frac{9}{26} \end{bmatrix}, \quad 28, x$$

$$= \begin{bmatrix} 1 & 0 & 0 & \frac{248}{207} \\ 0 & 1 & 0 & \frac{151}{207} \\ 0 & 0 & 1 & -\frac{163}{207} \end{bmatrix}, \quad 29, x = \begin{bmatrix} 1 & 0 & 0 & \frac{80}{109} \\ 0 & 1 & 0 & -\frac{13}{109} \\ 0 & 0 & 1 & -\frac{29}{109} \end{bmatrix}, \quad 30, x = \begin{bmatrix} 1 & 0 & 0 & \frac{527}{369} \\ 0 & 1 & 0 & \frac{176}{369} \\ 0 & 0 & 1 & -\frac{71}{123} \end{bmatrix}, \quad 31, x$$

$$= \begin{bmatrix} 1 & 0 & 0 & -\frac{91}{20} \\ 0 & 1 & 0 & \frac{327}{40} \\ 0 & 0 & 1 & -\frac{19}{40} \end{bmatrix}, \quad 32, x = \begin{bmatrix} 1 & 0 & 0 & \frac{131}{299} \\ 0 & 1 & 0 & \frac{402}{299} \\ 0 & 0 & 1 & -\frac{77}{299} \end{bmatrix}, \quad 33, x = \begin{bmatrix} 1 & 0 & 0 & \frac{15}{113} \\ 0 & 1 & 0 & \frac{50}{113} \\ 0 & 0 & 1 & \frac{67}{113} \end{bmatrix}, \quad 34, x$$

$$\begin{aligned}
&= \begin{bmatrix} 1 & 0 & 0 & \frac{43}{71} \\ 0 & 1 & 0 & -\frac{6}{71} \\ 0 & 0 & 1 & \frac{53}{71} \end{bmatrix}, \quad 35, x = \begin{bmatrix} 1 & 0 & 0 & \frac{7}{260} \\ 0 & 1 & 0 & \frac{113}{260} \\ 0 & 0 & 1 & -\frac{1}{10} \end{bmatrix}, \quad 36, x = \begin{bmatrix} 1 & 0 & 0 & \frac{13}{11} \\ 0 & 1 & 0 & -\frac{2}{3} \\ 0 & 0 & 1 & \frac{8}{33} \end{bmatrix}, \quad 37, x \\
&= \begin{bmatrix} 1 & 0 & 0 & -\frac{5}{6} \\ 0 & 1 & 0 & \frac{9}{10} \\ 0 & 0 & 1 & \frac{4}{5} \end{bmatrix}, \quad 38, x = \begin{bmatrix} 1 & 0 & 0 & \frac{8}{3} \\ 0 & 1 & 0 & \frac{4}{3} \\ 0 & 0 & 1 & -\frac{10}{9} \end{bmatrix}, \quad 39, x = \begin{bmatrix} 1 & 0 & 0 & \frac{13}{17} \\ 0 & 1 & 0 & \frac{22}{17} \\ 0 & 0 & 1 & -\frac{11}{17} \end{bmatrix}
\end{aligned}$$

> Решение той же системы уравнений с помощью обратной матрицы $x = M^{-1}F$:

> ОТВЕТ:

> $seq([i, x = MatrixInverse(P_i) \cdot B_i], i = 1 .. j - 1)$

$$\begin{aligned}
&1, x = \begin{bmatrix} -\frac{65}{69} \\ \frac{82}{69} \\ \frac{70}{69} \end{bmatrix}, \quad 2, x = \begin{bmatrix} -\frac{2}{3} \\ \frac{68}{3} \\ -\frac{115}{6} \end{bmatrix}, \quad 3, x = \begin{bmatrix} 25 \\ -\frac{35}{3} \\ -\frac{89}{9} \end{bmatrix}, \quad 4, x = \begin{bmatrix} \frac{38}{25} \\ \frac{19}{25} \\ -\frac{79}{50} \end{bmatrix}, \quad 5, x \\
&= \begin{bmatrix} \frac{7}{13} \\ -\frac{1}{13} \\ 1 \end{bmatrix}, \quad 6, x = \begin{bmatrix} \frac{14}{13} \\ \frac{19}{78} \\ -\frac{1}{2} \end{bmatrix}, \quad 7, x = \begin{bmatrix} \frac{155}{199} \\ \frac{182}{199} \\ -\frac{73}{199} \end{bmatrix}, \quad 8, x = \begin{bmatrix} \frac{64}{21} \\ -\frac{8}{21} \\ -\frac{26}{21} \end{bmatrix}, \quad 9, x = \begin{bmatrix} \frac{53}{238} \\ \frac{130}{119} \\ -\frac{3}{14} \end{bmatrix}, \\
&10, x = \begin{bmatrix} \frac{13}{43} \\ -\frac{39}{43} \\ \frac{34}{43} \end{bmatrix}, \quad 11, x = \begin{bmatrix} -\frac{91}{47} \\ \frac{52}{47} \\ \frac{199}{47} \end{bmatrix}, \quad 12, x = \begin{bmatrix} -\frac{44}{25} \\ \frac{38}{25} \\ \frac{4}{5} \end{bmatrix}, \quad 13, x = \begin{bmatrix} -\frac{167}{181} \\ \frac{71}{181} \\ \frac{226}{181} \end{bmatrix}, \quad 14, x
\end{aligned} \tag{10}$$

$$\begin{aligned}
&= \begin{bmatrix} -\frac{15}{26} \\ \frac{10}{13} \\ 1 \end{bmatrix}, 15, x = \begin{bmatrix} \frac{1}{40} \\ -\frac{21}{32} \\ \frac{217}{160} \end{bmatrix}, 16, x = \begin{bmatrix} \frac{35}{32} \\ -\frac{13}{64} \\ \frac{7}{16} \end{bmatrix}, 17, x = \begin{bmatrix} \frac{194}{37} \\ -\frac{132}{37} \\ \frac{80}{37} \end{bmatrix}, 18, x \\
&= \begin{bmatrix} -\frac{68}{97} \\ \frac{467}{291} \\ \frac{83}{291} \end{bmatrix}, 19, x = \begin{bmatrix} -\frac{37}{39} \\ \frac{5}{13} \\ \frac{80}{39} \end{bmatrix}, 20, x = \begin{bmatrix} \frac{5}{4} \\ \frac{3}{8} \\ -\frac{9}{8} \end{bmatrix}, 21, x = \begin{bmatrix} \frac{152}{149} \\ \frac{50}{149} \\ -\frac{13}{149} \end{bmatrix}, 22, x \\
&= \begin{bmatrix} -\frac{97}{357} \\ \frac{64}{119} \\ \frac{173}{357} \end{bmatrix}, 23, x = \begin{bmatrix} \frac{4}{43} \\ \frac{75}{86} \\ -\frac{15}{86} \end{bmatrix}, 24, x = \begin{bmatrix} \frac{23}{16} \\ -\frac{15}{16} \\ \frac{3}{16} \end{bmatrix}, 25, x = \begin{bmatrix} \frac{35}{72} \\ \frac{5}{8} \\ -\frac{5}{36} \end{bmatrix}, 26, x \\
&= \begin{bmatrix} \frac{2}{5} \\ -\frac{3}{5} \\ 1 \end{bmatrix}, 27, x = \begin{bmatrix} \frac{17}{26} \\ \frac{4}{13} \\ -\frac{9}{26} \end{bmatrix}, 28, x = \begin{bmatrix} \frac{248}{207} \\ \frac{151}{207} \\ -\frac{163}{207} \end{bmatrix}, 29, x = \begin{bmatrix} \frac{80}{109} \\ -\frac{13}{109} \\ -\frac{29}{109} \end{bmatrix}, 30, x \\
&= \begin{bmatrix} \frac{527}{369} \\ \frac{176}{369} \\ -\frac{71}{123} \end{bmatrix}, 31, x = \begin{bmatrix} -\frac{91}{20} \\ \frac{327}{40} \\ -\frac{19}{40} \end{bmatrix}, 32, x = \begin{bmatrix} \frac{131}{299} \\ \frac{402}{299} \\ -\frac{77}{299} \end{bmatrix}, 33, x = \begin{bmatrix} \frac{15}{113} \\ \frac{50}{113} \\ \frac{67}{113} \end{bmatrix}, 34, x \\
&= \begin{bmatrix} \frac{43}{71} \\ -\frac{6}{71} \\ \frac{53}{71} \end{bmatrix}, 35, x = \begin{bmatrix} \frac{7}{260} \\ \frac{113}{260} \\ -\frac{1}{10} \end{bmatrix}, 36, x = \begin{bmatrix} \frac{13}{11} \\ -\frac{2}{3} \\ \frac{8}{33} \end{bmatrix}, 37, x = \begin{bmatrix} -\frac{5}{6} \\ \frac{9}{10} \\ \frac{4}{5} \end{bmatrix}, 38, x
\end{aligned}$$

$$\begin{aligned} &= \begin{bmatrix} \frac{8}{3} \\ \frac{4}{3} \\ -\frac{10}{9} \end{bmatrix}, \quad 39, x = \begin{bmatrix} \frac{13}{17} \\ \frac{22}{17} \\ -\frac{11}{17} \end{bmatrix} \end{aligned}$$