Bogdan Chwaliæski

Zestaw 3 zadanie 8 N

In[49]:=
$$A = \begin{pmatrix} \frac{19}{12} & \frac{13}{12} & \frac{5}{6} & \frac{5}{6} & \frac{13}{12} & \frac{-17}{12} \\ \frac{13}{12} & \frac{13}{12} & \frac{5}{6} & \frac{5}{6} & \frac{-11}{12} & \frac{13}{12} \\ \frac{5}{6} & \frac{5}{6} & \frac{5}{6} & \frac{-1}{6} & \frac{5}{6} & \frac{5}{6} \\ \frac{5}{6} & \frac{5}{6} & \frac{-1}{6} & \frac{5}{6} & \frac{5}{6} & \frac{5}{6} \\ \frac{13}{12} & \frac{-11}{12} & \frac{5}{6} & \frac{5}{6} & \frac{13}{12} & \frac{13}{12} \\ \frac{-17}{12} & \frac{13}{12} & \frac{5}{6} & \frac{5}{6} & \frac{13}{12} & \frac{19}{12} \end{pmatrix};$$

In[50]:=
```
X1 = {1, 1, 1, 1, 1, 1};
X2 = {1, 1, 1, 1, 1, -1};
```

In[52]:=
```
MetodaPotegowa[A1_, V1_, precyzja_, iteracje_] :=
  Module[{A = N[A1], i, ER, L, L0, k, X, X0 = N[V1], Y},
   Norma[Wektor_] := Wektor/Sqrt[Wektor.Wektor];
   maxsize[Wektor_] := Module[{rozmiar, w = Wektor},
     If[Abs[w[[-1]]] ≥ Abs[w[[1]]],
          rozmiar = w[[-1]],
          rozmiar = w[[1]]];
     Return[rozmiar];];
   k = 1;
   While[k ≤ 2,
        If[k == 2,
             X0 = N[X2]];
           L0 = 0;
           i = 0;
               While[i ≤ iteracje,
                    i++;
                    Y = A.X0;
                    L = maxsize[Y];
                    X = 1/L Y;
                    Print["Lambda"k, " = ", NumberForm[L, 6]];
                    Print["X"k, " = ", MatrixForm[X]];
                    ER = Max[{Abs[L - L0], Norma[X - X0]}];

                        If[ER < precyzja, Break;];
                         X0 = X;
                         L0 = L; k++];];
  ];
```

In[53]:=
```
MetodaPotegowa[A, X1, 0.00001, 0]
```

$$\text{Lambda}_1 = 4.$$

$$X_1 = \begin{pmatrix} 1. \\ 1. \\ 1. \\ 1. \\ 1. \\ 1. \end{pmatrix}$$

$$\text{Lambda}_2 = 6.83333$$

$$X_2 = \begin{pmatrix} 1. \\ 0.268293 \\ 0.341463 \\ 0.341463 \\ 0.268293 \\ 0.121951 \end{pmatrix}$$