

**Bogdan Chwaliński**  
**Zestaw 3 Zadanie 12**

$$\text{In[16]:= } \mathbf{A} = \begin{pmatrix} 2 & -1 & 0 & 0 & 1 \\ -1 & 2 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 2 & -1 \\ 1 & 0 & 0 & -1 & 2 \end{pmatrix};$$

$\lambda = 0.38197;$

```

In[18]:= DoIt[A_, lambda_] :=
Module[{x, b, B, Alambda = A, n = Length[A]},
  b = Array[0 &, {n}];
  b[[1]] = 1;
  Norma[wektor_] := Sqrt[Abs[wektor[[1]]]^2 +
    Abs[wektor[[2]]]^2 + Abs[wektor[[3]]]^2 + Abs[wektor[[4]]]^2 + Abs[wektor[[5]]]^2];
  B = lambda * 
    \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix};
  Do[
    Alambda[[i, i]] = Alambda[[i, i]] - B[[i, i]];
    , {i, 1, n, 1}];
  Do[
    x = LinearSolve[Alambda, b];
    b = \frac{x}{Norma[x]};
    , {i, 1, n}
  ];
  Print["Lambda = ", lambda];
  Print["Otrzymane przybliżenie:"];
  Return[b // MatrixForm];
];

```

In[19]:= DoIt[A, lambda] // MatrixForm

Lambda = 0.38197

Otrzymane przybliżenie:

Out[19]//MatrixForm=

$$\begin{pmatrix} -0.601501 \\ -0.371748 \\ -1.16088 \times 10^{-16} \\ 0.371748 \\ 0.601501 \end{pmatrix}$$