Bogdan Chwaliæski

Zestaw 3 Zadanie 12

In[204]:= $A = \begin{pmatrix} 2 & -1 & 0 & 0 & 1 \\ -1 & 2 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 2 & -1 \\ 1 & 0 & 0 & -1 & 2 \end{pmatrix}$;

```
lambda = 0.38197;
```

In[206]:= **DoIt[A_, lambda_] :=**

$\quad$ **Module$\Big[$ {x, b, B, Alambda = A, n = Length[A]},**

$\qquad$ **b = Array[0 &, {n}];**

$\qquad$ **b$_{[\![1]\!]}$ = 1;**

$\qquad$ **Norma[wektor_] := $\sqrt{\text{Abs}[\text{wektor}_{[\![1]\!]}]^2 + \text{Abs}[\text{wektor}_{[\![2]\!]}]^2 + \text{Abs}[\text{wektor}_{[\![3]\!]}]^2}$;**

$\qquad$ **B = lambda * $\begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$;**

$\qquad$ **Do[**

$\qquad\quad$ **Alambda$_{[\![i,i]\!]}$ = Alambda$_{[\![i,i]\!]}$ - B$_{[\![i,i]\!]}$;**

$\qquad\quad$ **, {i, 1, n, 1}];**

$\qquad\quad$ **Do$\Big[$**

$\qquad\qquad$ **x = LinearSolve[Alambda, b] ;**

$\qquad\qquad$ **b = $\dfrac{x}{\text{Norma}[x]}$;,**

$\qquad\qquad$ **{i, 1, n}**

$\qquad\quad$ **$\Big]$;**

$\qquad$ **Print["Lambda = ", lambda];**

$\qquad$ **Print["Otrzymane przybli¿enie:"];**

$\qquad$ **Return[b // MatrixForm];**

$\quad$ **$\Big]$;**

In[207]:= **DoIt[A, lambda] // MatrixForm**

Lambda = 0.38197

Otrzymane przybli¿enie:

Out[207]//MatrixForm=

$\begin{pmatrix} -0.850651 \\ -0.525731 \\ 0. \\ 0.525731 \\ 0.850651 \end{pmatrix}$