Computational Physics - Project 1

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Inhaltsverzeichnis

1 Introduction to Project 1

$$
\mathbf{A} = \begin{pmatrix}
2 & -1 & 0 & \dots & \dots & 0 \\
-1 & 2 & -1 & 0 & \dots & \dots \\
0 & -1 & 2 & -1 & 0 & \dots \\
& \dots & \dots & \dots & \dots & \dots \\
0 & \dots & & -1 & 2 & -1 \\
0 & \dots & & 0 & -1 & 2
\end{pmatrix}
\tag{1}
$$

$$
\mathbf{A} = \begin{pmatrix}
b_1 & c_1 & 0 & \dots & \dots & \dots \\
a_2 & b_2 & c_2 & \dots & \dots & \dots \\
& a_3 & b_3 & c_3 & \dots & \dots \\
\dots & \dots & \dots & \dots & \dots \\
& & a_{n-2} & b_{n-1} & c_{n-1} \\
& & & a_n & b_n
\end{pmatrix}
\begin{pmatrix}
v_1 \\
v_2 \\
\dots \\
\dots \\
\dots \\
v_n
\end{pmatrix}
=
\begin{pmatrix}
\tilde{b}_1 \\
\tilde{b}_2 \\
\dots \\
\dots \\
\dots \\
\tilde{b}_n
\end{pmatrix}.
\tag{2}
$$

2 Rewrite the set of equations in matrix-form