

1. Isključivo primjenom Laplaceove transformacije riješite sljedeće Cauchyjeve probleme:

- a)
$$\begin{cases} y'' + y' + y = x + 6, \\ y(0) = 5, \\ y'(0) = 1. \end{cases}$$
- b)
$$\begin{cases} y'' + y' + x + y = 0, \\ y(0) = 1, \\ y'(0) = -1. \end{cases}$$
- c)
$$\begin{cases} y'' + y' = 2 \cdot x + 1, \\ y(0) = 0, \\ y'(0) = -1. \end{cases}$$
- d)
$$\begin{cases} y'' - y' = 2 \cdot (x - 1), \\ y(0) = 2, \\ y'(0) = 0. \end{cases}$$
- e)
$$\begin{cases} y'' - y' - 2 \cdot y = -2 \cdot e^x, \\ y(0) = 2, \\ y'(0) = 0. \end{cases}$$
- f)
$$\begin{cases} y'' + y' - y + 5 \cdot \sin x = 0, \\ y(0) = 1, \\ y'(0) = 2. \end{cases}$$
- g)
$$\begin{cases} y'' + 2 \cdot y' + 2 \cdot y + 10 \cdot \sin(2 \cdot x) = 0, \\ y(0) = y'(0) = 2. \end{cases}$$
- h)
$$\begin{cases} y'' - y' = 2 \cdot e^x, \\ y(0) = 0, \\ y'(0) = 2. \end{cases}$$
- i)
$$\begin{cases} y'' + y = 8 \cdot \cos x, \\ y(0) = y'(0) = 0. \end{cases}$$
- j)
$$\begin{cases} y'' + y + 6 \cdot \sin x = 0, \\ y(0) = 0, \\ y'(0) = 3. \end{cases}$$
- k)
$$\begin{cases} y'' - 2 \cdot y' + 4 \cdot x = 2, \\ y(0) = 1, \\ y'(0) = 2. \end{cases}$$

REZULTATI ZADATAKA

1.

a) $y = x + 5;$

b) $y = -x + 1;$

c) $y = x^2 - x;$

d) $y = -x^2 + 2;$

e) $y = 2 \cdot \operatorname{ch} x = e^x + e^{-x};$

f) $y = 2 \cdot \sin x + \cos x;$

g) $y = \sin(2 \cdot x) + 2 \cdot \cos(2 \cdot x);$

h) $y = 2 \cdot x \cdot e^x;$

i) $y = 4 \cdot x \cdot \sin x;$

j) $y = 3 \cdot x \cdot \cos x;$

k) $y = x^2 + e^{2 \cdot x}.$