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$$y^{(4)} + 2y'' + y = 0$$

$$\lambda^4 + 2\cdot\lambda^2 + 1 = (\lambda^2+1)^2$$

$$\lambda^2 + 1 = 0 \qquad \lambda_1 = i,\ \lambda_2 = -i$$

$$\lambda^4 + 2\cdot\lambda^2 + 1 = [(\lambda - i)\cdot(\lambda + i)]^2 = (\lambda - i)^2 \cdot (\lambda + i)^2$$

$\lambda_1 = i$, násobnost 2
$\lambda_2 = \overline{\lambda_1} = -i$, 2

FSŘ: $\varphi_1(t) = \sin t$, $\varphi_2(t) = \cos t$

$\varphi_3(t) = t\cdot\sin t$, $\varphi_4(t) = t\cdot\cos t$

$Y_H \dots y(t) = C_1\cdot\sin t + C_2\cdot\cos t + C_3\cdot t\cdot\sin t + C_4\cdot t\cdot\cos t$,

$C_1 \in \mathbb{R}$, $C_2 \in \mathbb{R}$, $C_3 \in \mathbb{R}$, $C_4 \in \mathbb{R}$.

$$y''' = 0$$

$$\lambda^3 = 0 \qquad \lambda_1 = 0,\ \text{násobnost } 3$$

FSŘ: $\varphi_1(t) = 1$, $\varphi_2(t) = t$, $\varphi_3(t) = t^2$

$Y_H \dots y(t) = C_1 + C_2\cdot t + C_3\cdot t^2$, $C_1 \in \mathbb{R}, C_2 \in \mathbb{R}, C_3 \in \mathbb{R}$.