LA2-ZP

$a = ?$

$$\underbrace{x^3+2x^2+ax+2}_{} \in \langle \overset{x_1}{x^3+2x^2+3x+4},\ \overset{x_2}{2x^3+x^2+4x+2},\ \overset{x_3}{x^2+x} \rangle_{\mathbb{R}}$$

(Teda hľadáme, aké koeficienty LK, aby sme ich kombináciou získali náš $P(x)$)

$$(x^3+2x^2+ax+2) = \alpha\cdot(x^3+2x^2+3x+4) + \beta\cdot(2x^3+x^2+4x+2) + \gamma\cdot(x^2+x)$$

$$(x^3+2x^2+ax+2) = \alpha x^3 + 2\alpha x^2 + \alpha 3x + 4\alpha + 2\beta x^3 + \beta x^2 + 4\beta x + 2\beta + \gamma x^2 + \gamma x$$

$$(1)x^3+2x^2+ax+2) = (\alpha+2\beta)\cdot x^3 + (2\alpha+\beta+\gamma)\cdot x^2 + (3\alpha+4\beta+\gamma)\cdot x + (4\alpha+2\beta)\cdot 1$$

$1 = \alpha + 2\beta$
$2 = 2\alpha + \beta + \gamma$
$a = 3\alpha + 4\beta + \gamma$
$2 = 4\alpha + 2\beta$

$$\begin{array}{ccc} x_1 & x_2 & x_3 \end{array}$$

$$\left(\begin{array}{ccc|c} 1 & 2 & 0 & 1 \\ 2 & 1 & 1 & 2 \\ 3 & 4 & 1 & a \\ 4 & 2 & 0 & 2 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 2 & 0 & 1 \\ 0 & -3 & 1 & 0 \\ 0 & -2 & 1 & a-3 \\ 0 & -6 & 0 & -2 \end{array}\right) \overset{\cdot 2}{\underset{\cdot 3}{\sim}} -$$

$$\left(\begin{array}{ccc|c} 1 & 2 & 0 & 1 \\ 0 & -3 & 1 & 0 \\ 0 & 0 & 1 & 3a-9 \\ 0 & 0 & -2 & -2 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 2 & 0 & 1 \\ 0 & -3 & 1 & 0 \\ 0 & 0 & 1 & 3a-9 \\ 0 & 0 & 0 & 0 \end{array}\right)$$

$-2 + 2(3a-9)$

$-2 + 6a - 18 = 0$

$6a = 20$

$a = \frac{20}{6} = \frac{10}{3}$

pre $a \in \left\{\frac{10}{3}\right\}$

Toto je LN, ale negenerujú priestor všetkých $P(x)$. Napr. nemôžeme nakombinovať x^4