

2A VЕ ZPOM

2.3 $a_1 = (-1, 3, -4)$, $a_2 = (1, -3, 4)$, $a_3 = (2, -6, 8)$ i $b = (0, \alpha, -1)$.

$$b = \beta a_1 + \gamma a_2 + \delta a_3$$

$$(0, \alpha, -1) = \beta(-1, 3, -4) + \gamma(1, -3, 4) + \delta(2, -6, 8)$$

$$(0, \alpha, -1) = (-\beta + \gamma + 2\delta, 3\beta - 3\gamma - 6\delta, -4\beta + 4\gamma + 8\delta)$$

$$\begin{array}{rcl} -\beta + \gamma + 2\delta & = & 0 \\ 3\beta - 3\gamma - 6\delta & = & \alpha \\ -4\beta + 4\gamma + 8\delta & = & -1 \end{array} \begin{array}{l} \nearrow 3 \\ \nwarrow -4 \end{array}$$

$$-\beta + \gamma + 2\delta = 0$$

$$0 = \alpha$$

$$0 = -1$$

- система не имеет

- hence no solution

- b не может быть
линейной комбинацией
векторов a_1, a_2, a_3

3. Ispitati linearnu zavisnost vektora:

3.1 $(-4, 2, -1, 3), (1, -3, 2, 4), (-2, 4, 3, -1), (-3, 5, 1, -2);$

3.2 $(1, 1, 2, 1), (1, -1, 1, 2), (-3, 1, -4, -5), (0, 2, 1, -1).$

$$\alpha(-4, 2, -1, 3) + \beta(1, -3, 2, 4) + \gamma(-2, 4, 3, -1) + \delta(-3, 5, 1, -2) = 0$$

$$(-4\alpha + \beta - 2\gamma - 3\delta, 2\alpha - 3\beta + 4\gamma + 5\delta, -\alpha + 2\beta + 3\gamma + \delta, 3\alpha + 4\beta - \gamma - 2\delta) = 0$$

$$-4\alpha + \beta - 2\gamma - 3\delta = 0$$

$$2\alpha - 3\beta + 4\gamma + 5\delta = 0$$

$$-\alpha + 2\beta + 3\gamma + \delta = 0$$

$$3\alpha + 4\beta - \gamma - 2\delta = 0$$

$$\begin{array}{l} -\alpha + 2\beta + 3\gamma + \delta = 0 \\ -4\alpha + \beta - 2\gamma - 3\delta = 0 \\ 2\alpha - 3\beta + 4\gamma + 5\delta = 0 \\ 3\alpha + 4\beta - \gamma - 2\delta = 0 \end{array} \begin{array}{l} \left. \begin{array}{l} -4 \\ 2 \\ -3 \end{array} \right\} \end{array}$$

$$-\alpha + 2\beta + 3\gamma + \delta = 0$$

$$-7\beta - 14\gamma - 7\delta = 0 \quad | : 7$$

$$\beta + 10\gamma + 7\delta = 0$$

$$-2\beta - 10\gamma - 5\delta = 0$$

$$-\alpha + 2\beta + 3\gamma + \delta = 0$$

$$-\beta - 2\gamma - \delta = 0$$

$$\beta + 10\gamma + 7\delta = 0$$

$$-2\beta + 10\gamma - 5\delta = 0$$

$$\boxed{\gamma = \delta = \beta = \alpha = 0}$$

$$-\alpha + 2\beta + 3\gamma + \delta = 0$$

$$-\beta - 2\gamma - \delta = 0$$

$$8\gamma + 6\delta = 0 \quad | : 2$$

$$14\gamma - 3\delta = 0$$

$$-\alpha + 2\beta + \delta + 3\gamma = 0$$

$$-\beta - \delta - 2\gamma = 0$$

$$3\gamma + 4\delta = 0$$

$$-3\gamma + 14\delta = 0$$

$$-\alpha + 2\beta + \delta + 3\gamma = 0$$

$$-\beta - \delta - 2\gamma = 0$$

$$2\gamma + 4\delta = 0$$

$$10\delta = 0 \quad \uparrow$$