Zadatak 21. Dane su točke $A(1,3)$, $B(2,2)$, $C(3,5)$ i $D(4,7)$. Vektor $\overrightarrow{AB}$ prikaži kao linearnu kombinaciju vektora $\overrightarrow{BC}$ i $\overrightarrow{BD}$.

Rješenje.

$$\overrightarrow{AB} = (2-1)\vec{\imath} + (2-3)\vec{\jmath} = \vec{\imath} - \vec{\jmath}$$
$$\overrightarrow{BC} = (3-2)\vec{\imath} + (5-2)\vec{\jmath} = \vec{\imath} + 3\vec{\jmath}$$
$$\overrightarrow{BD} = (4-2)\vec{\imath} + (7-2)\vec{\jmath} = 2\vec{\imath} + 5\vec{\jmath}$$
$$\overrightarrow{AB} = \alpha\overrightarrow{BC} + \beta\overrightarrow{BD}$$
$$\alpha(\vec{\imath} + 3\vec{\jmath}) + \beta(2\vec{\imath} + 5\vec{\jmath}) = \vec{\imath} - \vec{\jmath}$$
$$(\alpha + 2\beta)\vec{\imath} + (3\alpha + 5\beta)\vec{\jmath} = \vec{\imath} - \vec{\jmath}$$

$$\alpha + 2\beta = 1 \,/\cdot(-3)$$
$$3\alpha + 5\beta = -1$$

$$-3\alpha - 6\beta = -3$$
$$3\alpha + 5\beta = -1$$

$$-\beta = -4 \implies \beta = 4$$
$$\alpha + 8 = 1 \implies \alpha = -7$$
$$\overrightarrow{AB} = -7\overrightarrow{BC} + 4\overrightarrow{BD}$$