

$$\begin{bmatrix} 2 & 5 \end{bmatrix}$$

$$v_1 \cdot v_2 = x_1 x_2 + y_1 y_2$$

$$v_1 \cdot v_2 = 0 \quad v_1 \perp v_2$$

$$v_1 \cdot v_2 > 0 \quad \text{zwróty takie same}$$

$$v_1 \cdot v_2 < 0 \quad \text{— li — przeciwne}$$

$$v_1 \times v_2 = x_1 y_2 - x_2 y_1$$

Input interpretation
$(a, b, 0) \times (c, d, 0)$
Result
$(0, 0, -bc + ad)$

$$\vec{a} \times \vec{b} = S(\vec{a}) \vec{b}$$

$$S(\vec{a}) = \begin{bmatrix} 0 & -a_3 a_2 \\ a_3 & 0 & -a_1 \\ -a_2 & a_1 & 0 \end{bmatrix}, \text{ gdzie } \vec{a} = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \end{bmatrix}$$



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