



Problem:

Are the vectors $\vec{c}_1$ and $\vec{c}_2$, formed by the vectors $\vec{a}$ and $\vec{b}$ collinear?

$$\vec{a} = \{-1; 2; -1\}, \quad \vec{b} = \{2; -7; 1\}, \quad \vec{c}_1 = 6\vec{a} - 2\vec{b}, \quad \vec{c}_2 = \vec{b} - 3\vec{a}.$$

Solution:

$\vec{c}_1 = 6\vec{a} - 2\vec{b} = \{-10; 26; -8\}$, $\vec{c}_2 = \vec{b} - 3\vec{a} = \{5; -13; 4\}$, $\Rightarrow$ we notice that $\vec{c}_1 = -2 \cdot \vec{c}_2 \Rightarrow \vec{c}_1 + 2 \cdot \vec{c}_2 = 0$, which means that $\vec{c}_1$ and $\vec{c}_2$ are collinear.

Answer: yes, they are collinear.