## EXERCISES OF WEEK TWO

**Exercise 1.** If $v, w \in E^3$ are linearly independent, then

$$v, w, v \times w$$

are linearly independent in $E^3$.

**Exercise 2.** Let $v, w, z \in E^3$ such that

$$v \cdot a = w \cdot a = z \cdot a = 0$$

for some vector $0 \neq a \in E^3$. Then $v, w$ and $z$ are linearly dependent.

**Exercise 3.** Given $v, w \in E^n$, show that

$$|\|v\| - \|w\|| \leq \|v - w\|.$$

What is the relation between $v$ and $w$ if the equality holds?

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