# Álgebra Linear e Geometria Analítica

Lista de Exercícios 1

**Operações com vetores — método gráfico**

## Exercícios básicos

**1.** Dados os vetores $\vec{u}$ e $\vec{v}$ mostrados abaixo, desenhe um representante do vetor

a) $\vec{u} + \vec{v}$

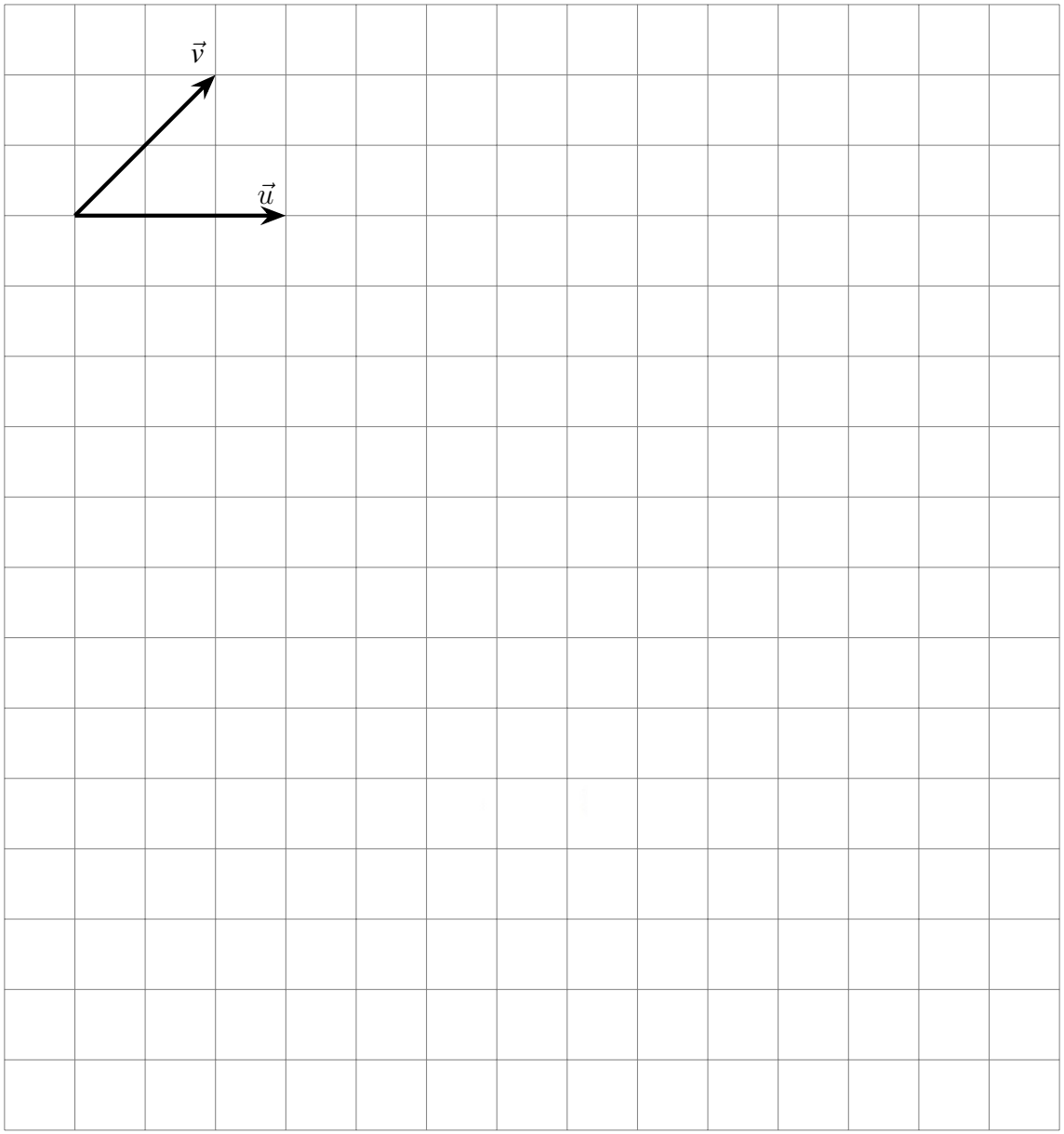
b) $\vec{u} - \vec{v}$

c) $\vec{v} - \vec{u}$

d) $\vec{v} + 2\vec{u}$

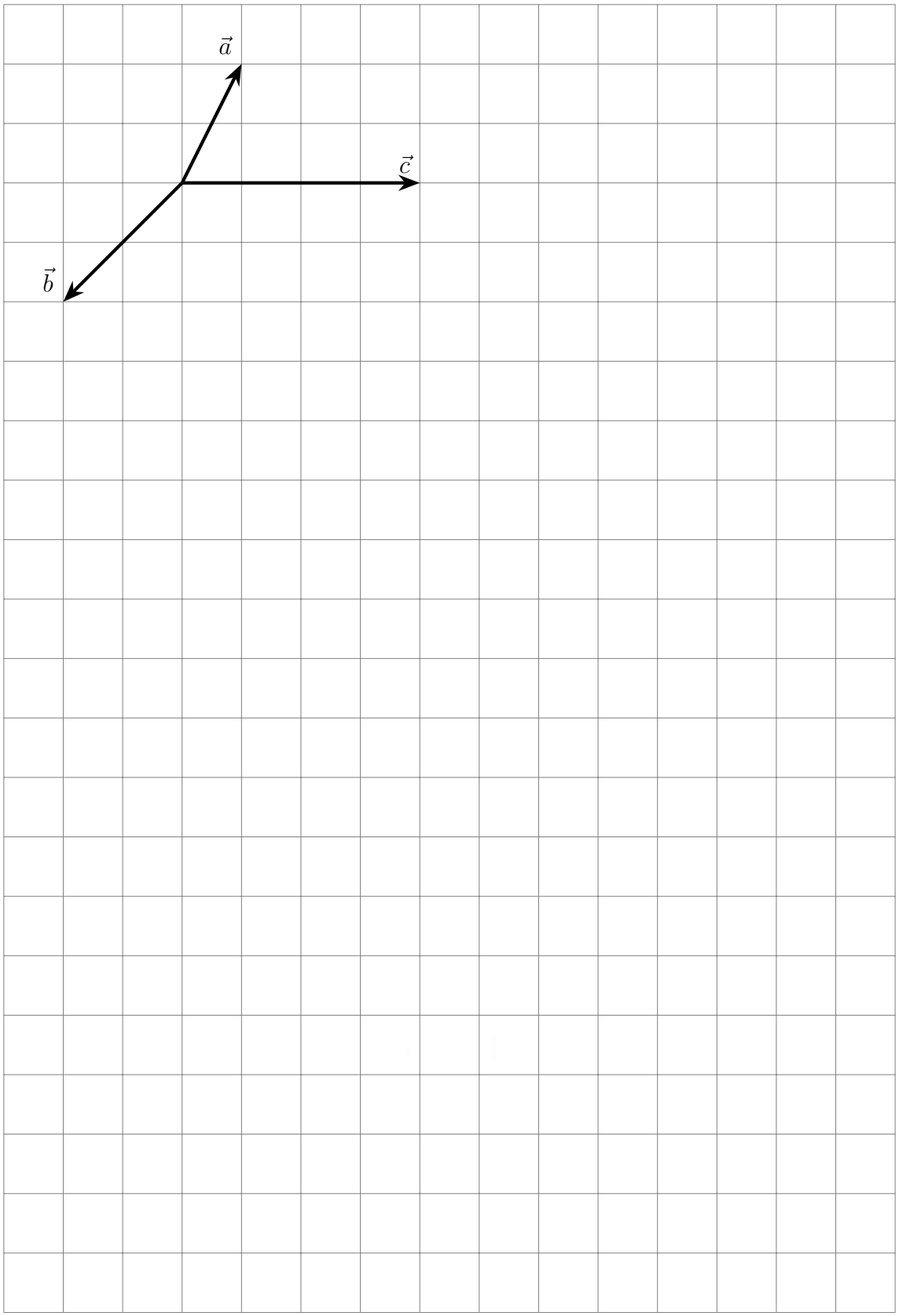
e) $\vec{v} - 2\vec{u}$

f) $2\vec{u} - 3\vec{v}$



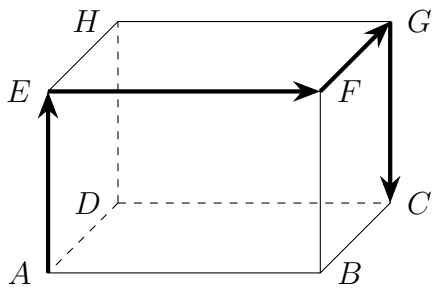
**2.** Dados os vetores $\vec{a}$, $\vec{b}$ e $\vec{c}$ mostrados abaixo, desenhe um representante do vetor

a) $\vec{a} + 2\vec{b} + 2\vec{c}$ b) $2\vec{a} - \vec{b} - \vec{c}$ c) $2\vec{c} - (\vec{b} + 2\vec{a})$

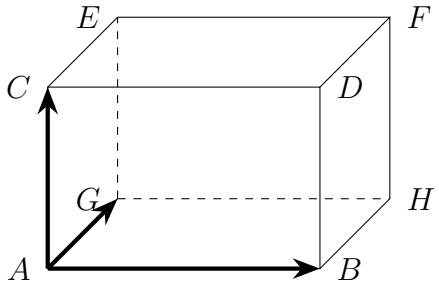


**3.** Determine o vetor que representa a soma dos vetores indicados.

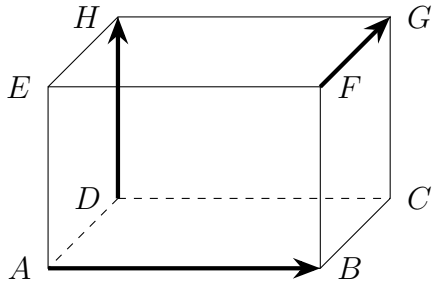
a)



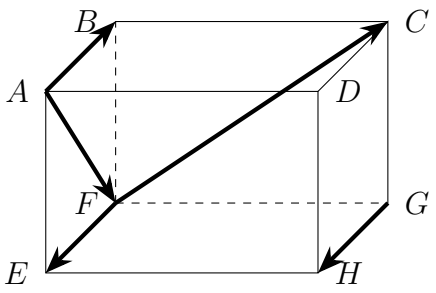

b)



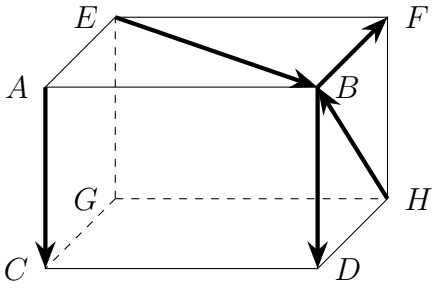

c)



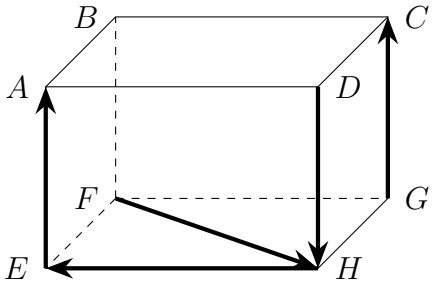

d)




e)



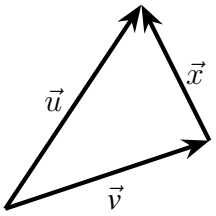

f)



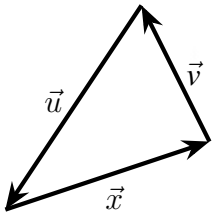

## Exercícios complementares

**4.** Em cada uma das figuras, determine uma expressão para o vetor $\vec{x}$ em função dos vetores $\vec{u}$ e $\vec{v}$.

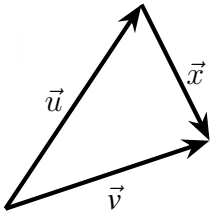
a)



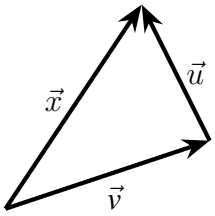

b)




c)




d)



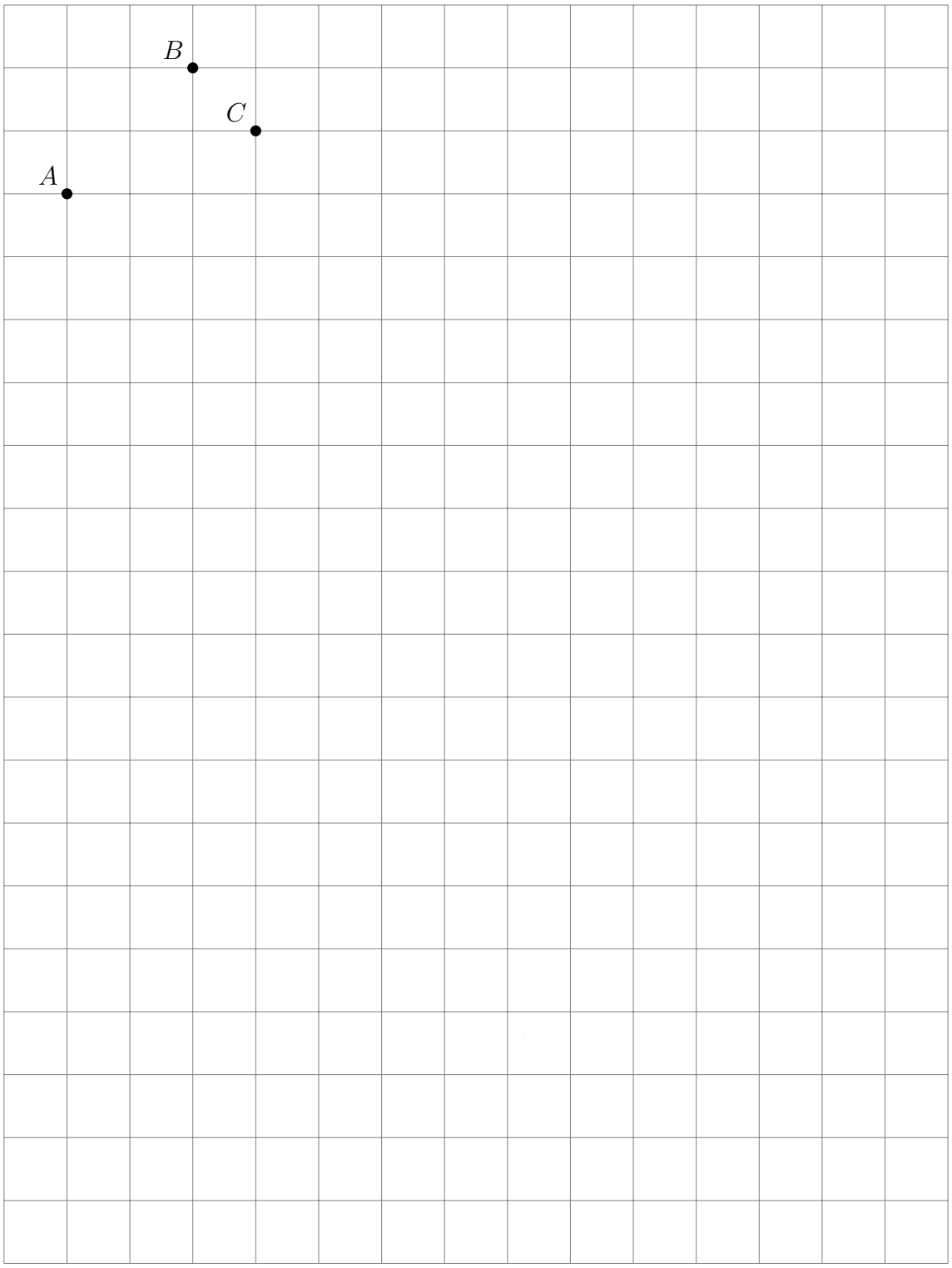
**5.** Dados três pontos não colineares $A$, $B$ e $C$, represente o vetor $\vec{x}$ nos casos:

a) $\vec{x} = \overrightarrow{BA} + \overrightarrow{BC}$

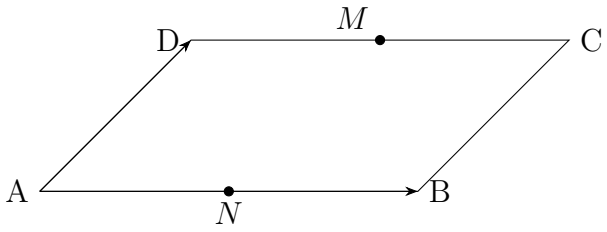
b) $\vec{x} = 2\overrightarrow{CA} - 2\overrightarrow{BA}$

c) $\vec{x} = \frac{1}{2}\overrightarrow{AB} - 2\overrightarrow{CB}$

d) $\vec{x} = 3\overrightarrow{AB} - 2\overrightarrow{BC}$



**6.** O paralelogramo $ABCD$ é determinado pelos vetores $\overrightarrow{AB}$ e $\overrightarrow{AD}$.




Sabendo que $M$ e $N$ são pontos médios dos lados $DC$ e $AB$, complete:

a) $\overrightarrow{AD} + \overrightarrow{AB} = \ldots\ldots\ldots$

b) $\overrightarrow{BA} + \overrightarrow{DA} = \ldots\ldots\ldots$

c) $\overrightarrow{AC} - \overrightarrow{BC} = \ldots\ldots\ldots$

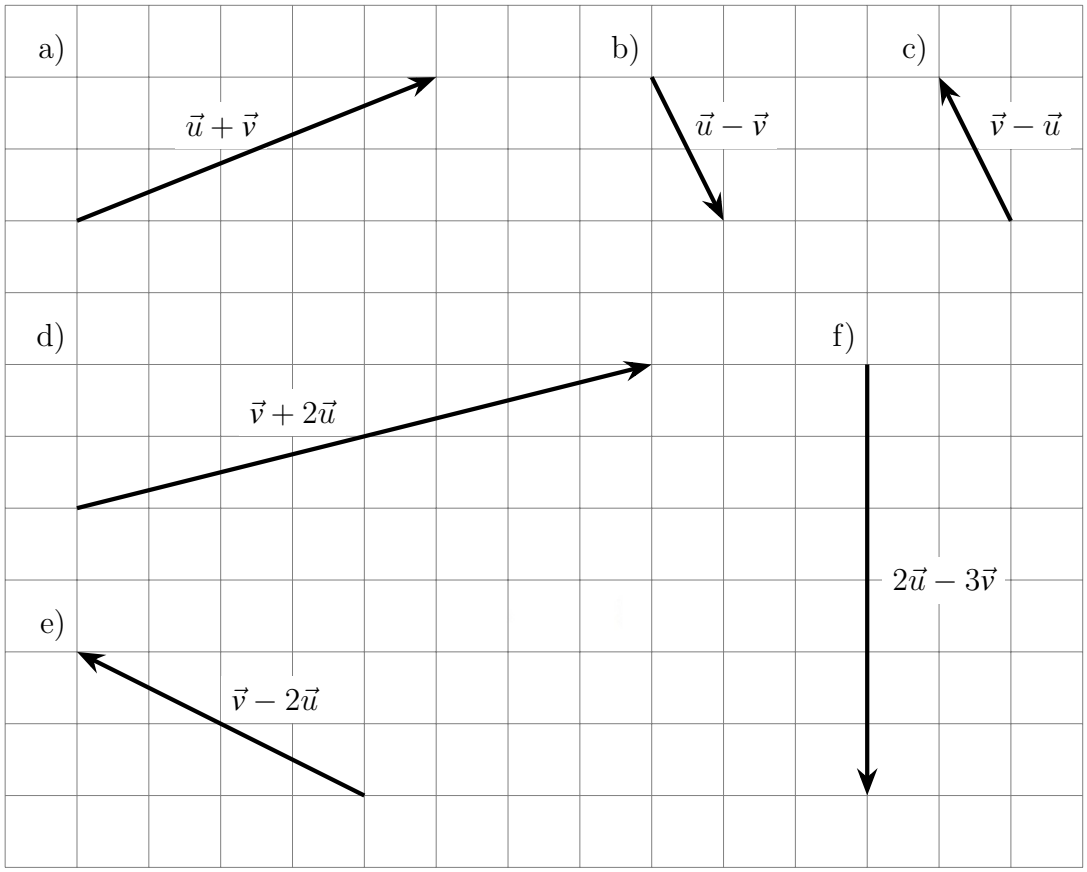
d) $\overrightarrow{AN} + \overrightarrow{BC} = \ldots\ldots\ldots$

e) $\overrightarrow{MD} + \overrightarrow{MB} = \ldots\ldots\ldots$

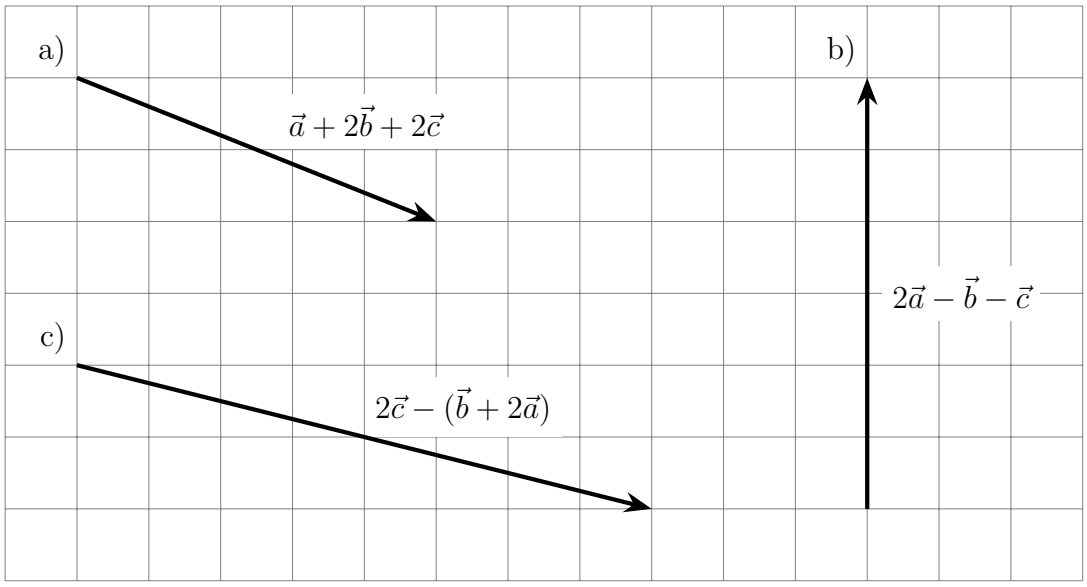
f) $\overrightarrow{BM} - \frac{1}{2}\overrightarrow{DC} = \ldots\ldots\ldots$

# Respostas

**1.**



**2.**




**3.** a) $\overrightarrow{AC}$ ou $\overrightarrow{EG}$

b) $\overrightarrow{AF}$

c) $\overrightarrow{AG}$

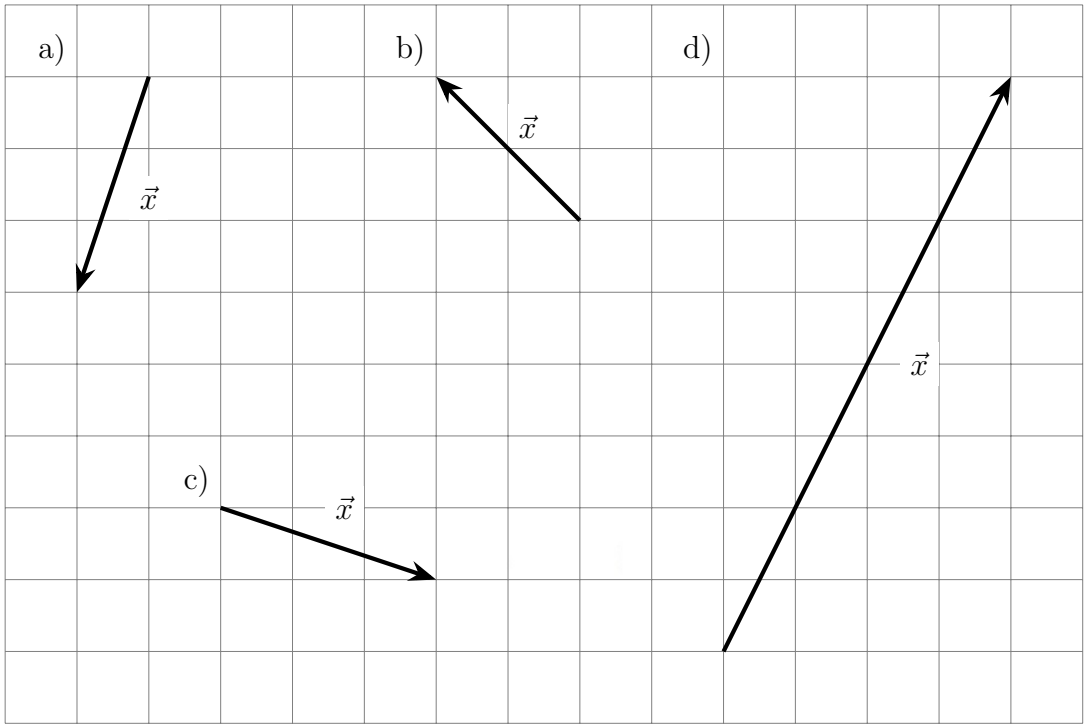
d) $\overrightarrow{AD}$ ou $\overrightarrow{BC}$ ou $\overrightarrow{FG}$ ou $\overrightarrow{EH}$

e) $\overrightarrow{ED}$

f) $\overrightarrow{FA}$ ou $\overrightarrow{GD}$

**4.** a) $\vec{x} = \vec{u} - \vec{v}$ b) $\vec{x} = -\vec{u} - \vec{v}$ c) $\vec{x} = \vec{v} - \vec{u}$ d) $\vec{x} = \vec{u} + \vec{v}$

**5.**




**6.** a) $\overrightarrow{AC}$

b) $\overrightarrow{CA}$

c) $\overrightarrow{AB}$ ou $\overrightarrow{DC}$

d) $\overrightarrow{AM}$ ou $\overrightarrow{NC}$

e) $\overrightarrow{DA}$ ou $\overrightarrow{MN}$ ou $\overrightarrow{CB}$

f) $\overrightarrow{BD}$