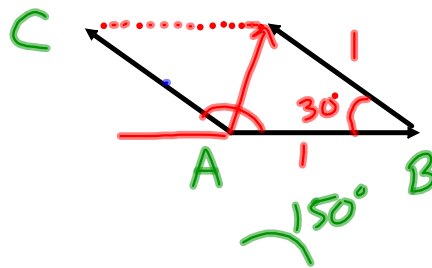


p.291 Ques. #13

 \vec{AB} \vec{AC} 

$$\begin{aligned}
 |\vec{AB} + \vec{AC}| &= \sqrt{|\vec{AB}|^2 + |\vec{AC}|^2 - 2|\vec{AB}||\vec{AC}|\cos 30^\circ} \\
 &= \sqrt{1 + 1 - 2\cos 30^\circ} \\
 &\doteq 0.52
 \end{aligned}$$

\therefore The magnitude of $|\vec{AB} + \vec{AC}|$ is 0.52 units.

L3 (6.3) Multiplication of a Vector by A Scalar

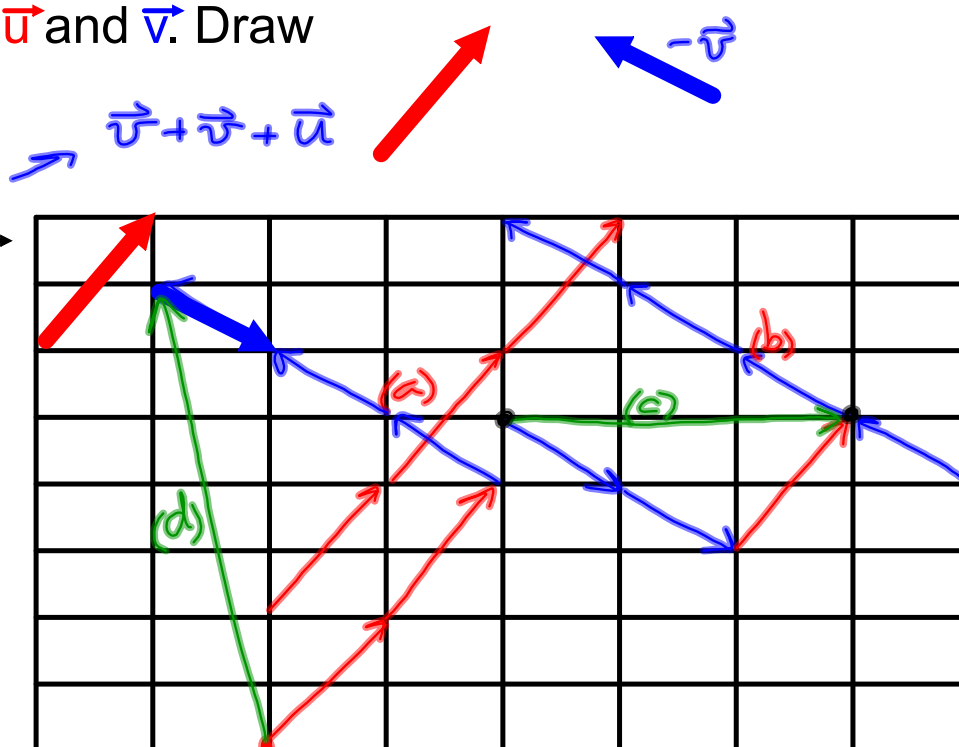
Given vectors \vec{u} and \vec{v} . Draw

a) $3\vec{u}$

b) $-4\vec{v}$

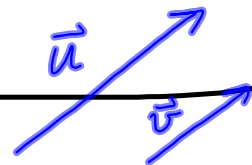
c) $2\vec{v} + \vec{u}$

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



Collinear Vectors

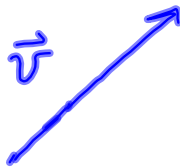
Two vectors are said to be **collinear** if and only if $\vec{u} = k\vec{v}$, where k is a nonzero scalar.



Unit Vector

The **unit vector** in the direction of the nonzero vector \vec{v}

is given by $\frac{1}{|\vec{v}|} \vec{v}$.



$$|\vec{v}| = 2$$

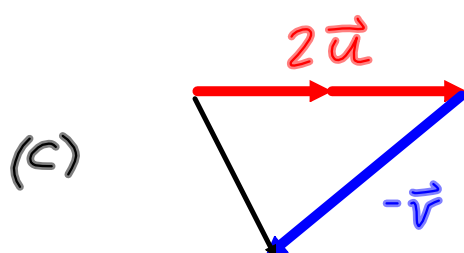
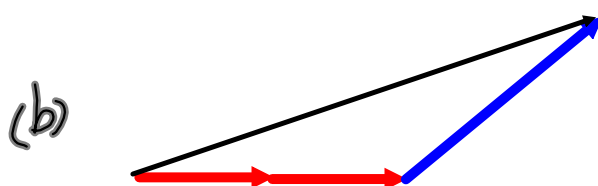
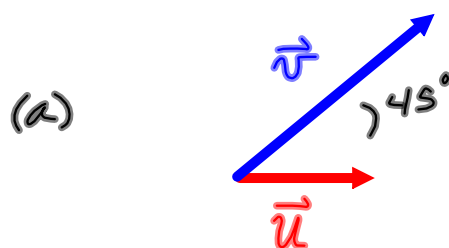


The **unit vector in the opposite direction** of the nonzero vector \vec{v}

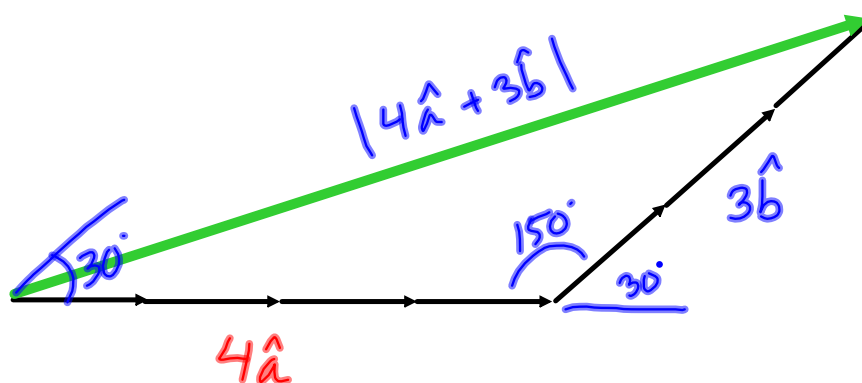
is given by $-\frac{1}{|\vec{v}|} \vec{v}$.



- Ex1: a) Draw two vectors \vec{u} and \vec{v} with an angle of 45° between them.
b) Draw $2\vec{u} + \vec{v}$.
c) Draw $2\vec{u} - \vec{v}$.



Ex2: The vectors \hat{a} and \hat{b} are unit vectors with a 30° angle between them. Find $|4\hat{a} + 3\hat{b}|$.
 ans: 6.77



$$\begin{aligned}
 |4\hat{a} + 3\hat{b}| &= \sqrt{|4\hat{a}|^2 + |3\hat{b}|^2 - 2|4\hat{a}||3\hat{b}|\cos 150^\circ} \\
 &= (16 + 9 - 24\cos 150^\circ)^{1/2} \\
 &\doteq 6.77
 \end{aligned}$$

Assigned Work

p.299-300 # 2, 4, 5, 6de, 9, 10,
13, 14, 15