VD 6.4

Given $\vec{u}$ and $\vec{v}$, find $\overrightarrow{w}=\vec{u}+\vec{v}$

(1) $\overrightarrow{w}=\vec{u}+\vec{v}$, $\vec{a}=\vec{u}-\vec{v}$ and $\overrightarrow{w}\cdot\vec{a}$

(2) θ between $\overrightarrow{w}$ and $\vec{a}$ (degree)

(3) $\text{Proj}_{\vec{a}}\overrightarrow{w}$

(4) and the normal vector of $\vec{n}$ after decomposition.

$\vec{u}$	$\vec{v}$	$\overrightarrow{w}=\vec{u}+\vec{v}$	$\vec{a}=\vec{u}-\vec{v}$	$\overrightarrow{w}\cdot\vec{a}$	θ between $\overrightarrow{w}$ and $\vec{a}$ (degree)	$\text{Proj}_{\vec{a}}\overrightarrow{w}$	normal vector of $\vec{n}$
2i+3j	i-j	3i+2j	i+4j	11	42.27	$\frac{11}{17}i+\frac{44}{17}j$	$\frac{40}{17}i-\frac{10}{17}j$
-6i+2j	2i+4j	-4i+6j	-8i-2j	20	70.35	$-\frac{40}{17}i-\frac{10}{17}j$	$-\frac{28}{17}i+\frac{112}{17}j$
3i-5j	i+j	4i-4j	2i-6j	32	26.57	$\frac{8}{5}i-\frac{24}{5}j$	$\frac{12}{5}i+\frac{4}{5}j$
-4i-3j	2i+2j	-2i-j	-6i-5j	17	13.24	$-\frac{102}{61}i-\frac{85}{61}j$	$-\frac{20}{61}i+\frac{24}{61}j$
-i+2j	2i+3j	i+5j	-3i-j	-8	119.74	$\frac{12}{5}i+\frac{4}{5}j$	$-\frac{7}{5}i+\frac{21}{5}j$
4i-3j	i+3j	5i	3i-6j	15	63.43	$i-2j$	$4i+2j$
2i+j	-3i+2j	-i+3j	5i-j	-8	119.74	$-\frac{20}{13}i+\frac{4}{13}j$	$\frac{7}{13}i+\frac{35}{13}j$