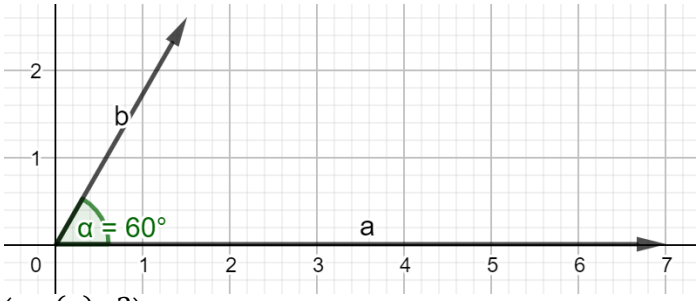
	Navn:		Skole:	
	Klasse: 20		Dato: 21. september 2021	Fag: Matematik A

Opgave 459

$|\vec{a}| = 7$
$|\vec{b}| = 3$
$v = 60$

$\vec{a} = \begin{pmatrix} 7 \\ 0 \end{pmatrix}$



$\vec{b} = \begin{pmatrix} \cos(v) \cdot 3 \\ \sin(v) \cdot 3 \end{pmatrix}$
$\vec{b} = \begin{pmatrix} \cos(60) \cdot 3 \\ \sin(60) \cdot 3 \end{pmatrix}$
$\vec{b} = \begin{pmatrix} 0.5 \cdot 3 \\ 0.866 \cdot 3 \end{pmatrix}$
$\vec{b} = \begin{pmatrix} 1.5 \\ 2.598 \end{pmatrix}$

$\vec{a} \bullet \vec{b} = x_a \cdot x_b + y_a \cdot y_b$
$\vec{a} \bullet \vec{b} = 1.5 \cdot 7 + 2.598 \cdot 0$
$\vec{a} \bullet \vec{b} = 10.5$

$$\left|\overrightarrow{V_{\frac{b}{a}}}\right| = \frac{\vec{b} \bullet \vec{a}}{|\vec{a}|}$$
$$\left|\overrightarrow{V_{\frac{b}{a}}}\right| = \frac{10.5}{7}$$
$$\left|\overrightarrow{V_{\frac{b}{a}}}\right| = 1.5$$

$$\left|\overrightarrow{V_{\frac{a}{b}}}\right| = \frac{\vec{a} \bullet \vec{b}}{|\vec{b}|}$$
$$\left|\overrightarrow{V_{\frac{a}{b}}}\right| = \frac{10.5}{3}$$
$$\left|\overrightarrow{V_{\frac{a}{b}}}\right| = 3.5$$

$\vec{c} = \vec{a} - \vec{b}$
$\vec{c} = \begin{pmatrix} 7 \\ 0 \end{pmatrix} - \begin{pmatrix} 1.5 \\ 2.598 \end{pmatrix}$
$\vec{c} = \begin{pmatrix} 7 - 1.5 \\ 0 - 2.598 \end{pmatrix}$
$\vec{c} = \begin{pmatrix} 5{,}5 \\ -2{,}598 \end{pmatrix}$

$$\left|\overrightarrow{V_{\frac{c}{a}}}\right| = \frac{\vec{a} \bullet \vec{c}}{|\vec{a}|}$$

$$\left|\overrightarrow{V_{\frac{c}{a}}}\right| = \frac{7 \cdot 5.5 + 0 \cdot (-2.598)}{7}$$
$$\left|\overrightarrow{V_{\frac{c}{a}}}\right| = \frac{38.5}{7}$$
$$\left|\overrightarrow{V_{\frac{c}{a}}}\right| = 5.5$$

$$\left|\overrightarrow{V_{\frac{c}{b}}}\right| = \frac{\vec{b} \bullet \vec{c}}{\left|\vec{b}\right|}$$
$$\left|\overrightarrow{V_{\frac{c}{b}}}\right| = \frac{1.5 \cdot 5.5 + 2.598 \cdot (-2.598)}{3}$$
$$\left|\overrightarrow{V_{\frac{c}{b}}}\right| = \frac{1.5}{3}$$
$$\left|\overrightarrow{V_{\frac{c}{b}}}\right| = 0.5$$