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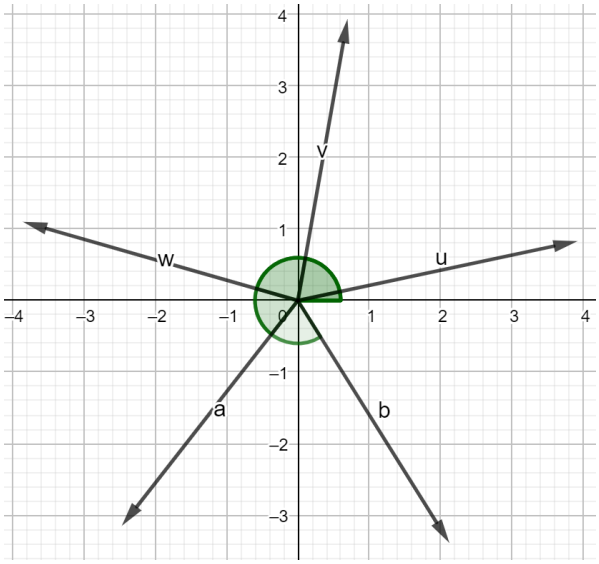
Opgave 436

$$x_v = 4 \cdot \cos(v)$$
$$y_v = 4 \cdot \sin(v)$$
$$V_v = \begin{pmatrix} x_v \\ y_v \end{pmatrix}$$



$$x_{12} = 4 \cdot \cos(12) \approx 3{,}91259$$
$$y_{12} = 4 \cdot \sin(12) \approx 0{,}8316468$$
$$\overrightarrow{V_{12}} = \begin{pmatrix} 3.91 \\ 0.83 \end{pmatrix}$$

$$x_{80} = 4 \cdot \cos(80) \approx 0{,}6945927$$
$$y_{80} = 4 \cdot \sin(80) \approx 3{,}939231$$
$$\overrightarrow{V_{80}} = \begin{pmatrix} 0.69 \\ 3.94 \end{pmatrix}$$

$$x_{164} = 4 \cdot \cos(164) \approx -3{,}845047$$
$$y_{164} = 4 \cdot \sin(164) \approx 1{,}102549$$
$$\overrightarrow{V_{164}} = \begin{pmatrix} -3.85 \\ 1.10 \end{pmatrix}$$

$$x_{232} = 4 \cdot \cos(232) \approx -2{,}462646$$
$$y_{232} = 4 \cdot \sin(232) \approx -3{,}152043$$
$$\overrightarrow{V_{232}} = \begin{pmatrix} -2.46 \\ -3.15 \end{pmatrix}$$

$$x_{302} = 4 \cdot \cos(302) \approx 2{,}119677$$
$$y_{302} = 4 \cdot \sin(302) \approx -3{,}392192$$
$$\overrightarrow{V_{302}} = \begin{pmatrix} 2.12 \\ -3.39 \end{pmatrix}$$

$$\overrightarrow{V_{sum}} = \overrightarrow{V_{12}} + \overrightarrow{V_{80}} + \overrightarrow{V_{164}} + \overrightarrow{V_{232}} + \overrightarrow{V_{302}}$$
$$\overrightarrow{V_{sum}} = \begin{pmatrix} 3.91 \\ 0.83 \end{pmatrix} + \begin{pmatrix} 0.69 \\ 3.94 \end{pmatrix} + \begin{pmatrix} -3.85 \\ 1.10 \end{pmatrix} + \begin{pmatrix} -2.46 \\ -3.15 \end{pmatrix} + \begin{pmatrix} 2.12 \\ -3.39 \end{pmatrix} = \begin{pmatrix} 0{,}419 \\ -0{,}671 \end{pmatrix}$$

$$\left|\overrightarrow{V_{sum}}\right| = \sqrt{{V_{sum}}_x^2 + {V_{sum}}_y^2}$$
$$\left|\overrightarrow{V_{sum}}\right| = \sqrt{0.419^2 + (-0.671)^2} \approx 0{,}7910765$$

$$\angle V_{sum} = \tan^{-1}\left(\frac{{V_{sum}}_y}{{V_{sum}}_x}\right)$$
$$\angle V_{sum} = 360 + \tan^{-1}\left(\frac{-0.671}{0.419}\right) \approx 301{,}9824$$