

Il s'agit de la correction des exercices du livre de 1e :

https://manuel.sesamath.net/index.php?page=telechargement_1spe_2019

Exercices 31, 34, 38, 43 pp.234-235.

31

Pythagore ARD
 $AD^2 = 128$
 $AD = \sqrt{128}$
 $\approx 11,3$

$\vec{AB} \cdot \vec{AD} = 0$

$\vec{BO} \cdot \vec{BC} = +BI \times BC = 32$

$\vec{BO} \cdot \vec{BC} = BO \times BC \times \cos(\alpha) = \frac{\sqrt{128}}{2} \times 8 \times \frac{\sqrt{2}}{2} = \frac{128}{4} \times 8 = \frac{16 \times 2}{1} = 32$

$\vec{AB} \cdot \vec{AO} = 4 \times 8 = 32$

$\vec{OB} \cdot \vec{OD} = -OB \times OD$
 $= -\frac{\sqrt{128}}{2} \times \frac{\sqrt{128}}{2}$
 $= -\frac{128}{4} = -32$

34

$\vec{u} \cdot \vec{v} = \|\vec{u}\| \|\vec{v}\| \cos(\angle(\vec{u}, \vec{v}))$
 $= 5 \times \sqrt{3} \times \cos(135^\circ) \approx 5 \times \sqrt{3} \times \left(-\frac{\sqrt{2}}{2}\right)$

$AH = \sqrt{3} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{6}}{2}$

$(\vec{AC}, \vec{AH}) = 45^\circ$ $\frac{AH}{AC} = \cos(45^\circ)$ $\vec{AB} \cdot \vec{AC} = -AH \times AD = -\frac{\sqrt{6}}{2} \times 5$

38

$\sqrt{6} = 2 \times \sqrt{3} \times \cos(\alpha)$
 $\frac{\sqrt{6}}{2\sqrt{3}} = \cos(\alpha)$
 $\frac{\sqrt{2}}{2} = \cos(\alpha)$
 $\pm 45^\circ = \alpha$

$\rightarrow \div (2\sqrt{3})$

$\vec{u} \cdot \vec{v}$

43

a) $\vec{u} \cdot \vec{v} = 2 \times (-3) + 1 \times (-1) = -7$

b) $\vec{w} \cdot \vec{v} = 1 \times (-3) + 4 \times (-1) = -7$

c) $\vec{v} + \vec{w} = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$ $\vec{u} \cdot (\vec{v} + \vec{w}) = 2 \times (-2) + 1 \times 3 = -1$

d) $\vec{u} \cdot (\vec{v} + \vec{w}) = \vec{u} \cdot \vec{v} + \vec{u} \cdot \vec{w} = -7 + 6 = -1$

d) $-2\vec{u} \cdot \vec{v} + 3\vec{v} \cdot \vec{w} = -2 \times (-7) + 3 \times (-7) = -7$